

# RWS – Tradition & Innovation. Made in Germany.




## Ammunition for armed forces and law enforcement

RWS GmbH is the reliable partner for law enforcement and military customers in all areas of small calibre ammunition. Since 1886, we have been synonymous with innovation and quality for infantry and law enforcement ammunition as one of the preeminent national and international manufacturers in this segment.

All over the world, armed forces and law enforcement agencies with highly diverse requirements appreciate our premium products. In addition to standard ammunition, which fully meets NATO requirements, we are also Europe's leading manufacturer of low-pollutant ammunition for mission, training and simulation scenarios. Special products for very particular, customised use cases round off our portfolio.

## Research, development, innovation

As a passionate driver of innovation, we aim at assisting our customers in the creation of tailored products, to ensuring greater security in our world. In doing so, we can draw on long-standing experience in the area of research und development. Products such as the 4.6x30 or the first heavy metal-free primer kits speak for themselves when it comes to rigorous quality in development matters. As a reliable partner known for igniting ideas, we would gladly assist you in the creation of special products or system solutions for firearms and ammunition.







ACTION Line	6 / 7
NT Line	8 / 9
DM Line / DAG Line	10 / 11
<b>Calibre 9x19</b>	<b>12 - 22</b>
ACTION 4 SXF / ACTION 5 SXF	12 / 13
ACTION 6 SXF / ACTION 6 SE	14 / 15
GREEN RANGE SXF / GREEN RANGE S SXF	16 / 17
NATO Ball / NATO Ball SX	18 / 19
LF FMJ SXF / LF FMJ SX	20 / 21
DM41 Soft Core / DM51A1 Soft Core	22

<b>Calibre 4.6x30</b>	<b>24 - 35</b>
Subsonic SX	25
ACTION SX / FMJ SX	26 / 27
AP SX / Training SX	28 / 29
Blank SX / Semi Frangible SX	30 / 31
DM21 Soft Core / DM31 Hard Core /	32 / 33
DM41 DEA / DM18 Blank cartridge	34 / 35





<b>Calibre 5.56x45</b>	<b>36 - 49</b>
LF STYX ACTION SX	38
NATO Ball / NATO Tracer	40 / 41
NATO IR Tracer	42
Blank / DM18A1	44 / 45
Training HV SX / FMJ (M193)	46 / 47
DM11A1 Double Core / DM41A1 Soft Core	48
DM21A1 Soft Core Tracer	49

<b>Calibre 7.62x51</b>	<b>50 - 59</b>
NATO Ball (M80)	52 / 53
NATO Tracer (M62)	53
NATO IR Tracer	55
Blank	56 / 57
DM111A2	57
DM21A3	58
DM68A1 Blank	59





<b>Calibre 12.7x99</b>	<b>60 - 69</b>
LF Ball SX / LF Tracer SX	62 / 63
LF IR Tracer SX	63
HC SX	64
SR Solid SX	65
SR Solid Tracer SX	66
SR Solid IR Tracer SX	67
DM91A1 / DM31A1	68 / 69
DM101A1	69

<b>SWISS P</b>	<b>70 / 71</b>
<b>Calibre 12/70</b>	<b>72 - 77</b>
ROTTWEIL MAGNUM ENTRY I	73
ROTTWEIL MAGNUM ENTRY II	75
18.2mmx70 DM209, ZINC PELLET ENTRY I	76
18.2mmx70 DM219, ZINC PELLET ENTRY II	77
<b>Ballistic data</b>	<b>79 - 91</b>







9x19 ACTION 4 SXF  
page 12



9x19 ACTION 5 SXF  
page 13



9x19 ACTION 6 SXF  
page 14



9x19 ACTION SE SXF  
page 15



9x19 GREEN RANGE SXF  
page 17



9x19 GREEN RANGE S SXF  
page 17



## The world's most successful handgun calibre 9 x 19

For more than 100 years, our 9x19 calibre duty and training ammunition has proven its value to a large number of law enforcement agencies and military forces around the world.

Today, the portfolio includes a wide range of modern 9x19 loads for pistols and sub-machine guns. RWS GmbH is a leader in the sector of emission-reduced duty and training ammunition for law enforcement and military use.

## ACTION Line - one solution for all missions

Conventional full metal jacket bullets no longer optimally fulfill the requirements of modern duty ammunition for authorities. Low energy release in the target medium can easily lead to over-penetration of soft targets and thus endanger nearby bystanders.

Due to the increased risk of terrorism and willingness to use violence, product offers now require solutions that reliably contain and prevent such situations, whilst simultaneously and significantly reducing the risk of background threats to uninvolved third parties.

The products in our ACTION Line offer these solutions - in combination with our patented SINTOX Forensis ignition kit with an absolute minimum of pollutant emissions for the shooter and the possibility of forensic analysis.



9x19 NATO BALL  
page 18



9x19 NATO BALL SX  
page 18



5.56x45 NATO BALL  
page 40



5.56x45 NATO TRACER  
page 41



5.56x45 NATO IR TRACER  
page 42



5.56x45 FMJ (M193)  
page 47



5.56x45 BLANK  
page 44



7.62x51 NATO BALL (M80)  
page 52



7.62x51 NATO TRACER (M62)  
page 53



7.62x51 NATO IR TRACER  
page 55



7.62x51 BLANK  
page 56



12.7x99 LF BALL SX  
page 62



12.7x99 LF TRACER SX  
page 62



12.7x99 LF IR TRACER SX  
page 63



12.7x99 HC SX  
page 64



12.7x99 SOLID SX  
page 65



12.7x99 SOLID TRACER SX  
page 66



12.7x99 SR SOLID IR TRACER SX  
page 67



\* Image 75% of original size

## NT Line always reliable - everywhere

We are proud to present our product range fully meeting NATO requirements and covering the calibres 9x19, 5.56x45, 7.62x51 and 12.7x99. A range that offers a wealth of deployment, simulation and training options with a wide variety of weapon systems.



9mmx19 DM41  
SOFT CORE  
page 22



9mmx19 DM51A1  
SOFT CORE  
page 22



4.6mmx30 DM21  
SOFT CORE  
page 32



4.6mmx30 DM31  
HARD CORE  
page 33



4.6mmx30 DM41, DEA  
page 34



4.6mmx30 DM18  
BLANK page 35



5.56mmx45 DM11A1  
DOUBLE CORE  
page 48



5.56mmx45 DM21A1  
SOFT CORE TRACER  
page 49



5.56mmx45 DM41A1  
SOFT CORE  
page 48



5.56mmx45 DM18A1  
BLANK  
page 45



7.62mmx51 DM111A2  
SOFT CORE  
page 57



7.62mmx51 DM21A3  
SOFT CORE TRACER  
page 58



7.62mmx51 DM68A1  
BLANK  
page 59



12.7mmx99 DM91A1  
SOFT CORE  
page 68



12.7mmx99 DM101A1  
SOFT CORE TRACER  
page 69



12.7mmx99 DM31A1  
HARD CORE  
page 68



18.2mmx70 DM209  
ZINC PELLET ENTRY I  
page 76



18.2mmx70 DM219  
ZINC PELLET ENTRY II  
page 77

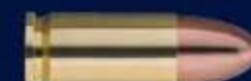


## DM Line –

A reliable partner of the German Armed Forces since 1959.

The history of our DM Line in simulation, mission and German Armed Forces training goes back a long way. The basic requirements: maximum reliability even under the most diverse climatic conditions and consistent reduction of pollutants (SINTOX® ignition technology, REACH-compliant propellant powder). Only products that achieve the highest manufacturing standards make it through our partner's demanding qualification process and are introduced as a „German model“ for widespread use in the troops – which includes snipers, bodyguards and other special forces.

9x19 FMJ SX  
page 20



9x19 FMJ SXF  
page 20



4.6x30 SUBSONIC SX  
page 25



4.6x30 ACTION SX  
page 26



4.6x30 FMJ SX  
page 27



4.6x30 AP SX  
page 28



4.6x30 TRAINING SX  
page 29



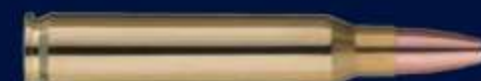
4.6x30 BLANK SX  
page 30



4.6x30  
SEMI FRANGIBLE SX  
page 31



5.56x45  
LF STYX ACTION SX  
page 38



5.56x45 TRAINING HV SX  
page 46



12/70  
ROTTWEIL MAGNUM ENTRY I  
page 73



12/70  
ROTTWEIL MAGNUM ENTRY II  
page 75



## DAG Line – our line of tradition

As the original company name of Dynamit Nobel AG, the DAG Line is firmly established as an extremely reliable ammunition series of the highest quality standards and has gained worldwide recognition as a manufacturer's label fully meeting NATO requirements.

These premium cartridges for training and operations cover an extremely wide range of calibres - from 9x19 to 4.6x30 and 12.7x99.



<b>9x19 ACTION 4 SXF</b>	
Bullet	Solid 6.1 g / 94 gr
Bullet material	Brass / Plastic
Primer / Propellant powder	SINTOX Forensis® Double based Nitrocellulose powder
Case material	Brass
Cartridge weight	approx. 10.1 g
Net. explosive weight	approx. 0.6 g
Term of Reference	TR 2009**
Temperature Range	-30°C to +52°C
Mean chamber pressure	max. 2700 bar (21°C)
Velocity v <sub>3</sub> / Energy	420 m/s (1378 fps) 538J / 100 mm Barrel
Accuracy at 25 m	s <sub>a</sub> ≤ 25 mm, 30 Cart. 100 mm Barrel
Max. energy transfer*	≤60 J/cm / 100 mm Barrel
Penetration at 5 m	min. 4x 1.0 mm
Packaging / Weight	50pcs. Folding Box / approx. 0.6 kg 1000pcs. Cardboard Box/ approx. 11.8 kg

<b>9x19 ACTION 5 SXF</b>	
Bullet	Solid 6.1 g / 94 gr
Bullet material	Brass / Plastic
Primer / Propellant powder	SINTOX Forensis® Double based Nitrocellulose powder
Case material	Brass
Cartridge weight	approx. 10.1 g
Net. explosive weight	approx. 0.6 g
Term of Reference	Technical terms of delivery
Temperature Range	-20°C to +52°C
Mean chamber pressure	max. 2700 bar (21°C)
Velocity v <sub>3</sub> / Energy	420 m/s (1378 fps) 540 J / 100 mm Barrel
Accuracy at 25 m	s <sub>a</sub> ≤ 25 mm, 30 Cart. 100 mm Barrel
Max. energy transfer *	≤ 75 J/cm / 100 mm Barrel
Packaging / Weight	50pcs. Cardboard Box / approx. 0.6 kg 1000pcs. Cardboard Box/ approx. 11.3 kg

## 9x19 ACTION 4 SXF

6.1 g / 94 gr



Plastic starter cap  
(X-ray detectable)

Monolithic bullet  
made of turned brass



The 9x19 ACTION 4 SXF is a cartridge specially designed for police and official use. It was developed and fully certified in accordance with the technical guideline for operational ammunition 2009. It is lead-free and with low-emission. This is ensured by a deformation bullet made of turned brass with a mass of 6.1 g.

Particular features such as the special bullet geometry and the attached plastic starter cap enable controlled deformation and energy transfer to the target (max. 60 J/cm). Another special feature of the product is the X-ray detectable additive in the plastic cap, which facilitates its location during wound care.



Item No.231 76 09 // Ballistic data page 80

## 9x19 ACTION 5 SXF

6.1 g / 94 gr



Plastic starter cap  
(X-ray detectable)

Monolithic bullet  
made of turned brass



The 9x19 ACTION 5 SXF cartridge is an upgrade of the 9x19 ACTION 4 SXF in regard to energy transfer to the target. It is a tactical cartridge that was developed specifically for handguns used by law enforcement or the police. The special bullet geometry leads to a maximum energy transfer of 75 J/cm, which equates to a 25% increase in energy transfer to the target. The lead-free deformation bullet is equipped with an attached plastic starter cap that ensures consistent deformation response even on covered soft targets.



Item No.231 47 22 // Ballistic data page 81





# 9x19 ACTION 6 SXF

6.1 g / 94 gr



Plastic starter cap  
(X-ray detectable)

Monolithic bullet  
made of turned brass



The ACTION 6 SXF is a tactical cartridge for law enforcement that was adapted and tested according to the C.I.P. requirements. It can be used as a tactical or training cartridge and is optimised for use in full-size duty pistols. It also offers significantly reduced collateral risk during mission scenarios.

The bullet geometry was optimised in line with the technical requirements of the C.I.P. This means that reliable deformation is guaranteed due to the lower gas pressure compared to TR 2009, even for covered targets. It also passes all the requirements of the FBI test for handgun ammunition (10% gelatine).



Item No.240 24 48 // Ballistic data page 81

# 9x19 ACTION SE SXF

7.0 g / 108 gr



The 9x19 ACTION SE SXF was developed as an effective combat enhancement for submachine guns. It is compatible with handguns and submachine guns. Fired from a submachine gun, the special bullet reliably pierces an SK1 ballistic vest, even from a distance of 50 metres. The bullet deforms into four fragments and transfers up to 60 J/cm of energy to the target medium.

A significant advantage is that the bullet petals remain non-frangible during deformation and the residual weight of the bullet is over 90%.



Controlled  
fragmentation  
(4 fragments)

Beaten  
CuZn bullet



Item No.241 10 94 // Ballistic data page 81

## 9x19 ACTION 6 SXF

Bullet	Solid 6.1 g / 94 gr
Bullet material	Brass / Plastic
Primer / Propellant powder	SINTOX Forensis® Double based Nitrocellulose powder
Case material	Brass
Cartridge weight	approx. 10.1 g
Net. explosive weight	approx. 0.5 g
Term of Reference	C.I.P.
Temperature Range	-20°C to +52°C
Mean chamber pressure	max. 2350 bar (21°C)
Velocity v <sub>3</sub> / Energy	420 m/s (1378 fps) 538 J / 150 mm Barrel
Accuracy at 25 m	s <sub>a</sub> ≤ 25 mm. 30 Cart. 150 mm Barrel
Max. energy transfer *	≤50 J/cm / 150 mmBarrel
Packaging / Weight	50pcs. Folding Box / approx. 0.6 kg 1000pcs. Cardboard Box/approx. 11.8 kg

## 9x19 ACTION SE SXF

Bullet	Solid 7.0 g / 108 gr
Bullet material	Brass
Primer / Propellant powder	SINTOX Forensis® Double based Nitrocellulose powder
Case material	Brass
Cartridge weight	approx. 12.3 g
Net. explosive weight	approx. 0.5 g
Term of Reference	Technical Terms of delivery
Temperature Range	-30°C to +52°C
Mean chamber pressure	max. 2700 bar (21°C)
Velocity v <sub>3</sub> / Energy	450 m/s (1476 fps) 710 J / 220 mm Barrel
Accuracy at 25 m	s <sub>a</sub> ≤ 25 mm, 30 Cart. 100 mm Barrel
Max. energy transfer*	≥ 60 J/cm / 220 mm Barrel
Penetration at 50 m	SK-1 VPAM-3
Packaging / Weight	50pcs. Cardboard Box / approx. 0.65 kg 1000pcs. Cardboard Box/approx. 12.7 kg

\* in 20% gelatine



**9x19 GREEN RANGE SXF**

Bullet	Solid 6.1 g / 94 gr
Bullet material	Brass
Primer / Propellant powder	SINTOX Forensis® Double based Nitrocellulose powder
Case material	Brass
Cartridge weight	approx. 10.1 g
Net. explosive weight	approx. 0.5 g
Term of Reference	TR 2009*
Temperature Range	-20°C to +52°C
Mean chamber pressure	max. 2700 bar (21°C)
Velocity v <sub>3</sub> / Energy	415 m/s (1362 fps) 525 J / 100 mm Barrel
Accuracy at 25 m	s <sub>0</sub> ≤ 25 mm, 30 Cart. 100 mm Barrel
Packaging / Weight	50pcs. Folding Box / approx. 0.6 kg 1000pcs. Cardboard Box / approx. 11.8 kg

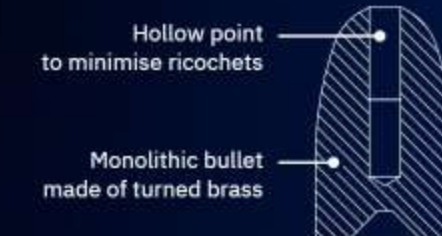
**9x19 GREEN RANGE S SXF**

Bullet	Solid 6.1 g / 94 gr
Bullet material	Brass
Primer / Propellant powder	SINTOX Forensis® Double based Nitrocellulose powder
Case material	Brass
Cartridge weight	approx. 10.1 g
Net. explosive weight	approx. 0.4 g
Term of Reference	TR 2009*
Temperature Range	-20°C to +52°C
Mean chamber pressure	max. 2700 bar (21°C)
Velocity v <sub>3</sub> / Energy	415 m/s (1362 fps) 525 J / 100 mm Barrel
Accuracy at 25 m	s <sub>0</sub> ≤ 25 mm, 30 Cart. 100 mm Barrel
Packaging / Weight	50pcs. Folding Box / approx. 0.6 kg 1000pcs. Cardboard Box / approx. 11.8 kg

\*German technical regulation 2009

**9x19 GREEN RANGE SXF**

6.1 g / 94 gr



The 9x19 GREEN RANGE SXF is a training cartridge for use by law enforcement. The lead-free and low-emission training cartridge largely fulfils the requirements of TR 2009.

The deformation bullet is turned from solid brass and has a weight of 6.1 g. It also describes the same trajectory as the ACTION 4 SXF and ACTION 5 SXF tactical cartridges. The special bullet geometry significantly reduces the risk of ricochets. In addition, the cartridge's excellent reliability makes it suitable for use with fully automatic submachine guns.

Item No. 231 78 55 // Ballistic data page 82

**9x19 GREEN RANGE S SXF**

6.1 g / 94 gr



The GREEN RANGE S SXF is a fully TR2009-certified training cartridge for use by law enforcement, which was specially engineered for police training requirements. The deformation bullet is turned from solid brass and has a weight of 6.1 g. It also describes the same trajectory as the ACTION 4 SXF and ACTION 5 SXF tactical cartridges. The special bullet geometry significantly reduces the risk of ricochets. The 9x19 GREEN RANGE S is lead free and has minimised emissions, which makes it the ideal product for use in indoor shooting ranges. In addition, the cartridge's excellent reliability makes it suitable for use with fully automatic submachine guns.

Item No. 231 86 64// Ballistic data page 82



Large hollow point for  
reliable bullet stop in the  
ballistic vest

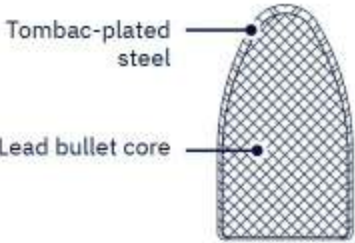
Monolithic bullet  
made of turned brass

\* Only intended for weapons that were tested according to TR 2009.



# 9x19 NATO BALL

8.0 g / 124 gr

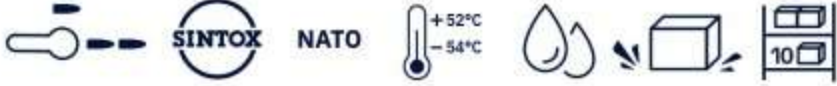


The 9x19 NATO Ball is a tactical and training cartridge for military use. The cartridge is fully compatible with both pistols and submachine guns. It uses a heavy full metal jacket bullet with a lead core and weighs 8.0 g. This bullet design fully complies with the requirements of the Hague Convention respecting the Laws and Customs of War on Land (Annex E, Article 23). A SINOXID primer is used in the load, which guarantees reliable ignition even under the most adverse conditions. The cartridge meets the NATO standards according to the requirements of AEP-97.

Item No. 242 50 05 // Ballistic data page 82

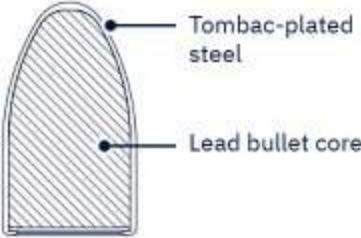
# 9x19 NATO BALL SX

8.0 g / 124 gr



The 9x19 NATO Ball SX is an operational and training cartridge for military users. It is equally suitable for use in pistols and submachine guns without restriction. The fully encapsulated bullet used is an 8.0 g full metal jacket bullet with a lead core. The use of the fully encapsulated bullet and the heavy metal-free SINTOX primer reduces the shooter's exposure to harmful substances to an absolute minimum. It can therefore be used in indoor shooting ranges without any restrictions.

Item No. 242 70 35 // Ballistic data page 83



## 9x19 NATO BALL

Bullet	Full metal jacket 8.0 g / 124 gr
Bullet material	Lead / Tombac-plated steel
Primer / Propellant powder	SINOXID* / Double based Nitrocellulose powder
Case material	Brass
Cartridge weight	approx. 13 g
Net. explosive weight	approx. 0.4 g
Term of Reference	MC-MOPI (AOP-4090)
Temperature Range	-54°C to +52°C
Mean chamber pressure	max. 2850 bar (21°C)
Velocity v <sub>10</sub> / Energy	385 m/s (1263 fps) 593 J / 200 mm Barrel
Accuracy at 50 m	s <sub>H</sub> ; s <sub>V</sub> ≤ 200 mm, 30 Cart. 200 mm Barrel
Packaging / Weight	50pcs. Folding Box / approx. 0.65 kg 1500pcs. M2A1Metal box/ approx. 22.5 kg

## 9x19 NATO BALL SX

Bullet	Full metal jacket Soft core 8.0 g / 124 gr
Bullet material	Lead / Tombac / Steel (coated)
Primer / Propellant powder	SINOXID* / Double based Nitrocellulose powder
Case material	Brass
Cartridge weight	approx. 12.3 g
Net. explosive weight	approx. 0.6 g
Term of Reference	MC-MOPI (AOP-4090)
Temperature Range	-54°C to +52°C
Mean chamber pressure	max. 2800 bar (21°C)
Velocity v <sub>10</sub> / Energy	385 m/s (1263 fps) 593 J / 200 mm Barrel
Accuracy at 50 m	s <sub>H</sub> ; s <sub>V</sub> ≤ 200 mm, 30 Cart. 200 mm Barrel
Packaging / Weight	50pcs. Folding Box / approx. 0.65 kg 1500pcs. M2A1Metal box/ approx. 22.5 kg

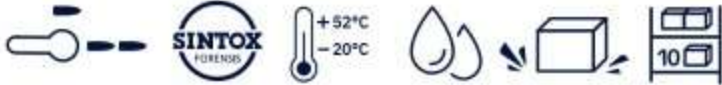
\* in 20% Gelatine





# 9x19 LF FMJ SXF

6.0 g / 93 gr



The 9x19 LF FMJ SXF is a lead-free tactical and training cartridge for law enforcement and military users. The cartridge is fully compatible with pistols and submachine guns that have been tested with the increased gas pressure specified in the technical guideline for 9 mm tactical ammunition. It has a classic full metal jacket bullet with a zinc core.

The combination of lead-free bullet, REACH-compliant propellant powder and spiked heavy metal-free primer reduces the shooter's exposure to potentially harmful emissions to an absolute minimum. The SINTOX Forensics primer also enables forensic analyses.

Item No. 242 98 70 // Ballistic data page 80  
Bullet cross section see also 9x19 LF FMJ SX

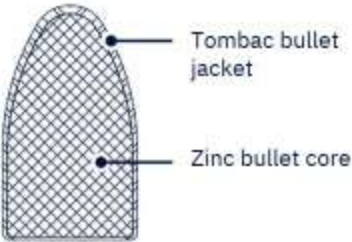
# 9x19 LF FMJ SX

6.0 g / 93 gr



The 9x19 LF FMJ SX is a lead-free tactical and training cartridge for law enforcement and military users. The cartridge is fully compatible with pistols and submachine guns proofed according to C.I.P. It has a classic full metal jacket bullet with a zinc core. The combination of lead-free bullet, REACH-compliant propellant powder and heavy metal-free primer reduces the shooter's exposure to potentially harmful emissions to an absolute minimum.

Item No. 242 29 75 // Ballistic data page 80



9x19 LF FMJ SXF	
Bullet	Full metal jacket 6.0 g / 93 gr
Bullet material	Zinc / Tombak
Primer / Propellant powder	SINTOX Forensics* / Double based Nitrocellulose powder
Case material	Brass
Cartridge weight	approx. 12 g
Net. explosive weight	approx. 0.5 g
Term of Reference	Technical terms of delivery
Temperature Range	-20°C to +52°C
Mean chamber pressure	max. 2350 bar (21°C)
Velocity v <sub>3</sub> / Energy	435 m/s (1427 fps) 568J / 150 mm Barrel
Accuracy at 25 m	s <sub>a</sub> ≤ 25 mm, 30 Cart. / 150 mm Barrel
Max. energy transfer *	≤50 J/cm / 100 mm Barrel
Packaging / Weight	50pcs. Folding Box / approx. 0.6 kg 1000pcs. Cardboard Box /approx. 11.5 kg

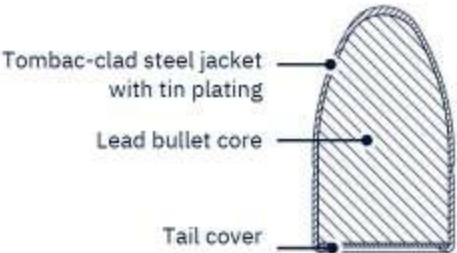
9x19 lf FMJ SX	
Bullet	Full metal jacket 6.0 g / 93 gr
Bullet material	Zinc / Tombak
Primer / Propellant powder	SINTOX Forensics* / Double based Nitrocellulose powder
Case material	Brass
Cartridge weight	approx. 12 g
Net. explosive weight	approx. 0.5 g
Term of Reference	C.I.P.
Temperature Range	-20°C to +52°C
Mean chamber pressure	max. 2350 bar (21°C)
Velocity v <sub>3</sub> / Energy	435 m/s (1427 fps) 568 J / 150 mm Barrel
Accuracy at 25 m	s <sub>a</sub> ≤ 25 mm, 30 Cart. / 150 mm Barrel
Max. energy transfer *	≤50 J/cm / 150 mm Barrel
Packaging / Weight	50pcs. Folding Box / approx. 0.6 kg 1000pcs. Cardboard Box /approx. 11.5 kg

\* in 20% Gelatine



# 9mmx19 DM41

8.0 g / 124 gr



The 9x19 DM41 is a tactical and training cartridge for law enforcement users. It was engineered and tested specifically for the Federal Ministry of the Interior and is fully compatible with both pistols and submachine guns. It uses a completely encapsulated full metal jacket bullet with a lead core and weighs 8.0 g. Emissions are reduced to a minimum in conjunction with the SINTOX primer, which makes the cartridge suitable for use in enclosed spaces.



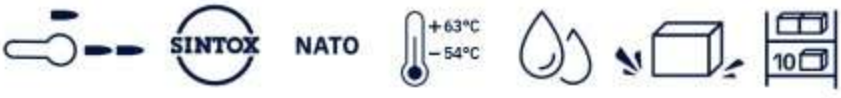
Item No. 212 58 97 // Ballistic data page 83

<b>9x19 DM41</b>	
Bullet	Encapsulated Full metal jacket Soft core 8.0 g / 124 gr
Bullet material	Lead / Steel (tombac-and tin-plated)
Primer / Propellant powder	SINTOX® / Double based Nitrocellulose powder
Case material	Brass
Cartridge weight	approx. 12.2 g
Net. explosive weight	approx. 0.5 g
Term of Reference	Technical terms of delivery
Temperature Range	-30°C to +52°C
Mean chamber pressure	max. 2800 bar (21°C)
Velocity v <sub>10</sub> / Energy	min. 355 m/s (1164 fps) 504 J / 200 mm Barrel
Accuracy at 50 m	s <sub>a</sub> ≤ 25 mm, 30 Cart. 200 mm Barrel
Packaging / Weight	50pcs. Folding Box / approx. 0.65 kg 1000pcs. Cardboard box /approx. 13.6 kg

<b>9x19 DM51A1</b>	
Bullet	Full metal jacket Soft core 8.0 g / 124 gr
Bullet material	Lead / Steel (tombac-and tin-plated)
Primer / Propellant powder	SINTOX® / Double based Nitrocellulose powder
Case material	Brass
Cartridge weight	approx. 12.2 g
Net. explosive weight	approx. 0.5 g
Term of Reference	Technical terms of delivery
Temperature Range	-54°C to +63°C
Mean chamber pressure	max. 2850 bar (21°C)
Velocity v <sub>30</sub> / Energy	370 m/s (1214 fps) 548 J / 200 mm Barrel
Accuracy at 50 m	s <sub>a</sub> ≤ 25 mm, 30 Cart. 200 mm Barrel
Packaging / Weight	50pcs. Folding Box / approx. 0.65 kg 2500pcs. Wooden crate/approx. 37.5kg

# 9mmx19 DM51A1

8.0 g / 124 gr



The DM51A1 is the current tactical and training cartridge used by the German Armed Forces in 9x19 calibre. It was engineered and qualified to meet the high technical requirements of the Bundeswehr. The cartridge is now widely used by the German Armed Forces and is appreciated for its excellent reliability and quality. A fully encapsulated full metal jacket bullet is used for the load. The shooter's exposure to harmful substances is reduced to a minimum in combination with the patented heavy metal-free SINTOX primer, which makes the cartridge completely suitable for use in indoor shooting ranges. The DM51A1 cartridge is NATO-qualified according to the requirements of AEP-97.

Item No. 231 89 85 // Ballistic data page 83





# 4.6x30 – small, precise, powerful.

The 4.6x30 cartridge was developed by the company more than 20 years ago in close collaboration with the German weapons manufacturer Heckler & Koch. As a result, RWS has a well-established expertise, which is reflected in all our high-quality products of this calibre. Today, the portfolio comprises products in the calibre 4.6x30 for use in special police units such as personal protection, as well as loads for infantry use in combat support troops or special units.

The system is light and compact enough to be worn permanently on the body, as well as accurate and powerful enough to be effective against unprotected and protected targets at slightly longer ranges.

## 4.6x30 SUBSONIC SX

5.0 g / 77 gr



The 4.6x30 SUBSONIC SX is designed for special units in the law enforcement and military sectors. It carries a 5.0 g lead-free monolithic bullet with a load that enables safe operation in the subsonic range. The double-base nitrocellulose powder is specially adapted to the requirements of a subsonic cartridge. Noise reduction is maximised in combination with the suppressed Heckler & Koch MP7 submachine gun. Despite its subsonic velocity, the cartridge is highly effective against soft targets and soft targets with body armour: NATO CRISAT targets are reliably pierced at a range of up to 50 m.



### 4.6x30 SUBSONIC SX

Bullet	Solid 5.0 g / 77 gr	Term of Reference	Technical Terms of Delivery
Bullet material	Tungsten alloy (coated)	Temperature Range	-20°C to +52°C
Primer / Propellant powder	SINTOX* / Double based Nitrocellulose powder	Mean chamber pressure	max. 4000 bar (21°C)
Case material	Brass	Velocity v <sub>10</sub> / Energy	290 m/s (951 fps) / 210 J / MP7 (with silencer)
Cartridge weight	approx. 10.1 g	Accuracy at 50 m	s <sub>a</sub> ≤ 35 mm, 30 Cart. 180 mm Barrel
Net. explosive weight	approx. 0.6 g	Penetration at 50 m	NATO CRISAT
		Packaging / Weight	40pcs. Folding Box / approx. 0.4 kg 1760pcs. M2A1 Metal Box / approx. 20 kg

Item No. 231 89 29 // Ballistic data page 84

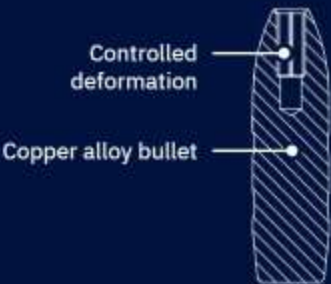


<b>4.6x30 ACTION SX</b>	4,6x30
Bullet	Solid 2.0 g / 31 gr
Bullet material	Tombac
Primer / Propellant powder	SINTOX® / Double based Nitrocellulose powder
Case material	Brass
Cartridge weight	approx. 6.3 g
Net. explosive weight	approx. 0.6 g
Term of Reference	Technical Terms of Delivery
Temperature Range	-30°C to +52°C
Mean chamber pressure	max. 4000 bar (21°C)
Velocity v <sub>10</sub> / Energy	678 m/s (2224 fps) / 460 J / 180 mm Barrel
Accuracy at 100 m	s <sub>a</sub> ≤ 30 mm, 30 Cart. / 180 mm Barrel
Packaging / Weight	40pcs. Folding Box / approx. 0.3 kg 1920pcs. M2A1 Metal Box/approx. 16.5 kg

<b>4.6x30 FMJ SX</b>	
Bullet	Full Metal Jacket 2.6 g / 40 gr
Bullet material	Lead / Steel (tombac-plated)
Primer / Propellant powder	SINTOX® / Double based Nitrocellulose powder
Case material	Brass
Cartridge weight	approx. 6.9 g
Net. explosive weight	approx. 0.6 g
Term of Reference	Technical Terms of Delivery
Temperature Range	-54°C to +52°C
Mean chamber pressure	max. 4000 bar (21°C)
Velocity v <sub>10</sub> / Energy	612 m/s (2008 fps) / 487 J / 180 mm Barrel
Accuracy at 100 m	s <sub>a</sub> ≤ 30 mm, 30 Cart. / 180 mm Barrel
Packaging / Weight	40pcs. Folding Box / approx. 0.3 kg 1920pcs M2A1 Metal Box/approx. 17.6kg

## 4.6x30 ACTION SX

2.0 g / 31 gr



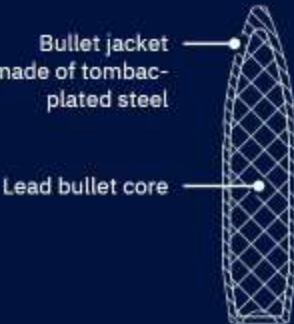
The 4.6x30 is a cartridge that is characterised by its high effectiveness against covered and uncovered soft targets due to a lead-free copper alloy. The lead-free tombac bullet's controlled deformation enables high energy transfer to the target and hence minimises the risk of collateral damage. The cartridge is therefore ideally suited for use by the police and other law enforcement agencies. It is also suitable for use for use in training in enclosed spaces or indoor shooting ranges, as the load is lead-free and with low-emission. The cartridge is specially adapted to the requirements of the Heckler & Koch MP7 submachine gun.



Item No. 231 67 31 // Ballistic data page 84

## 4.6x30 FMJ SX

2.6 g / 40 gr



The full metal jacket soft core cartridge is the world's first load in 4.6x30 calibre, developed in close cooperation with the German firearms manufacturer Heckler & Koch. It is perfectly engineered for the polygon barrel used in the MP7 A2 personal defence weapon, which ensures flawless functionality, even with fully automatic fire. The cartridge is equally suited to tactical use and training and has a lead core that is completely encased in a tombac-plated steel jacket. The full metal jacket soft core bullet weighing 2.6 g protects the bullet traps and makes the cartridge highly suitable for use in shooting ranges.



Item No. 231 67 32 // Ballistic data page 84



# 4.6x30 AP SX

2.0 g / 31 gr



Hardened steel core,  
copper-coated, blackened

The 4.6x30 AP SX, an operational cartridge for law enforcement and military users, is specifically optimised to penetrate body armour. The lead-free monolithic bullet weighing 2.0 g is highly effective against soft targets and body armour. This enables even the penetration of a NATO CRISAT target, consisting of 20 layers of Kevlar and a 1.6 mm thick titanium plate, at a range of 200 m.



Item No. 231.67.33 // Ballistic data page 84

# 4.6x30 TRAINING SX

1.7 g / 26 gr



Tin core

Tombac bullet  
jacket

The 4.6x30 TRAINING SX is a lead free training cartridge for law enforcement and military users. The semi-jacketed bullet weighing 1.7 g has a tin core encased in a tombac jacket. The exposed projectile core and optimised projectile geometry minimise the risk of ricochets. The cartridge is also ideal for enclosed shooting and training facilities thanks to the combination of SINTOX primer and REACH-compliant propellant powder.



Item No. 231.76.02 // Ballistic data page 84

## 4.6x30 AP SX

Bullet	Solid 2.0 g / 31 gr
Bullet material	Steel (coated)
Primer / Propellant powder	SINTOX* / Double based Nitrocellulose powder
Case material	Brass
Cartridge weight	approx. 6.3 g
Net. explosive weight	approx. 0.6 g
Term of Reference	Technical Terms of Delivery
Temperature Range	-54°C to +52°C
Mean chamber pressure	max. 4000 bar (21°C)
Velocity v <sub>10</sub> / Energy	670 m/s (2198 fps) / 449 J / 180 mm Barrel
Accuracy at 100 m	s <sub>a</sub> ≤ 30 mm, 30 Cart. 180 mm Barrel
Penetration at 200 m	NATO-CRISAT
Packaging / Weight	40pcs. Folding Box / approx. 0,3 kg 1920pcs. M2A1 Metal Box/approx. 16,5 kg

## 4.6x30 TRAINING SX

Bullet	Jacket soft core 1.7 g / 26 gr
Bullet material	Tin / Tombac
Primer / Propellant powder	SINTOX* / Double based Nitrocellulose powder
Case material	Brass
Cartridge weight	approx. 6.3 g
Net. explosive weight	approx. 0,6 g
Term of Reference	Technical Terms of Delivery
Temperature Range	-54°C to +52°C
Mean chamber pressure	≤ 4000 bar (21°C)
Velocity v <sub>10</sub> / Energy	630 m/s ( 2066 fps) / 460 J / 180 mm Barrel
Accuracy at 100 m	s <sub>a</sub> ≤ 30 mm, 30 Cart. / 180 mm Barrel
Packaging / Weight	40pcs. Folding Box / approx. 0,3 kg 1920pcs. M2A1 Metal Box/approx. 15,6kg



# 4.6x30 BLANK SX



Bullet simulation for safe firearm functionality

## 4.6x30 BLANK SX

Primer / Propellant powder	SINTOX® / Single based Nitrocellulose powder
Case material	Brass
Cartridge weight	approx. 4.5 g
Net. explosive weight	approx. 0.3 g
Term of Reference	Technical Terms of Delivery
Temperature Range	-20°C to +40°C
Mean chamber pressure	max. 4000 bar (21°C)
Packaging / Weight	40pcs. Folding Box / approx. 0.3 kg 1920pcs. M2A1 Metal Box/approx. 12.7kg



Nitrocellulose powder

Brass case

The 4.6x30 BLANK SX manoeuvre cartridge is designed for training and simulation scenarios in law enforcement and for military users.

It was specially engineered for the Heckler & Koch MP7 personal defence weapon to enable flawless functionality. A suitable manoeuvre cartridge device is required to ensure that the firearm functions properly. The manoeuvre cartridge is also completely suitable for indoor shooting ranges or training facilities.



Item No. 231 75 52

# 4.6x30 SEMI FRANGIBLE SX

1.7 g / 26 gr



The 4.6x30 Semi Frangible SX is a lead-free training ammunition for law enforcement and military users. The semi-frangible bullet with 1.7 g bullet mass consists of a sintered bullet core (copper), which is covered by a tombac jacket, similar to a semi-jacketed bullet. The exposed bullet core and the optimized bullet geometry reduce the risk of ricochets to a minimum, as the bullet disintegrates almost completely on impact with hard targets. Due to the combination with the SINTOX® primer, the cartridge is also ideal for use in indoor shooting and training ranges.



Tombac-coated jacket

Copper bullet-core



## 4.6x30 SEMI FRANGIBLE SX

Bullet	Soft core 1.7 g / 26 gr
Bullet material	Pressed copper bullet-core (sintered) / Tombac (coated)
Primer / Propellant powder	SINTOX® / Double based Nitrocellulose powder
Case material	Brass
Cartridge weight	approx. 6.3 g
Net. explosive weight	approx. 0.6 g

Term of Reference	Technical Terms of Delivery
Temperature Range	-40°C to +40°C
Mean chamber pressure	≤ 4000 bar (21°C)
Velocity v <sub>10</sub> / Energy	630 m/s (2066 fps) / 460 J / 180 mm Barrel
Accuracy at 50 m	s <sub>a</sub> ≤ 40 mm, 30 Cart. 180 mm Barrel
Packaging / Weight	40pcs. Folding Box / approx. 0.3 kg 1920pcs. M2A1 Metal Box/approx. 15.6kg

Item No. 231 81 86



4.6mmx30 DM21 SOFT CORE

Bullet	Full metal jacket 2.6 g / 40 gr
Bullet material	Lead, Steel (tombac-plated)
Primer / Propellant powder	SINTOX® / Double based Nitrocellulose powder
Case material	Brass
Cartridge weight	approx. 6.9 g
Net. explosive weight	approx. 0.6 g
Term of Reference	Technical Terms of Delivery
Temperature Range	-54°C to +52°C
Mean chamber pressure	max. 4000 bar (21°C)
Velocity v <sub>10</sub> / Energy	612 m/s (2008 fps) / 487 J / 180 mm Barrel
Accuracy at 100 m	s <sub>a</sub> ≤ 30 mm, 30 Cart. 180 mm Barrel
Packaging / Weight	40pcs. Folding Box / approx. 0.3 kg 3200pcs. Wooden crate / approx. 30 kg

4.6mmx30 DM31 HARD CORE

Bullet	Solid 2.0 g / 31 gr
Bullet material	Steel (hardened, coated)
Primer / Propellant powder	SINTOX® / Double based Nitrocellulose powder
Case material	Brass
Cartridge weight	approx. 6.3 g
Net. explosive weight	approx. 0.6 g
Term of Reference	Technical Terms of Delivery
Temperature Range	-54°C to +52°C
Mean chamber pressure	max. 4000 bar (21°C)
Velocity v <sub>10</sub> / Energy	658 m/s (2195 fps) 462 J / 180mm Barrel
Accuracy at 100 m	s <sub>a</sub> ≤ 30 mm, 30 Cart. / 180mm Barrel
Penetration at 200 m	NATO CRISAT
Packaging / Weight	40pcs. Folding Box / approx. 0,3 kg 1800pcs. M2A1 Metal Box/approx. 15,7kg



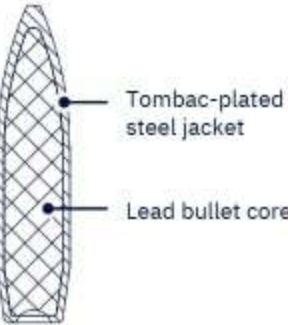
4.6mmx30 DM21 SOFT CORE

2.6 g / 40 gr



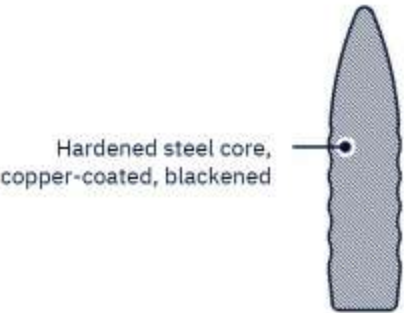
The full metal jacket soft core cartridge is the world's first load in 4.6x30 calibre. It was developed by RWS GmbH in close cooperation with the German firearms manufacturer Heckler & Koch. It is perfectly engineered for the polygon barrel used in the manufacturer's MP7 A2 personal defence weapon to ensure flawless functionality, even with fully automatic fire. The cartridge is equally suited to tactical use and training. Its bullet has a lead core that is completely encased in a tombac-plated steel jacket.

Item No. 231 58 32 // Ballistic data page 85



4.6mmx30 DM31 HARD CORE

2.0 g / 31 gr



The DM31 hard-core ammunition was specially developed for penetrating modern body armour. It is used multi-functionally by the German armed forces in the MP-7 submachine gun. The optimised monolithic projectile made of hardened steel, which weighs 2.0 g, is capable of effectively penetrating a NATO CRISAT target at distances of up to 200 metres. This target consists of 20 layers of Kevlar combined with a 1.6 mm thick titanium plate.

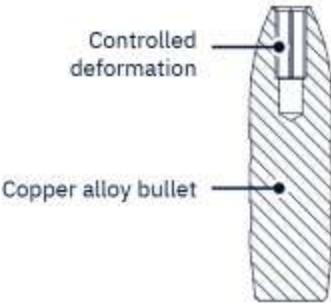
Item No. 231 67 21 // Ballistic data page 85





# 4.6mmx30 DM41 DEA

2.0 g / 31 gr



The low-emission tactical cartridge for special units of the German Armed Forces. The cartridge is specially adapted to the requirements of the Heckler & Koch MP7 A2 submachine gun. Its lead-free bullet is highly effective against covered and uncovered soft targets. The bullet's controlled deformation enables high energy transfer to the target and minimises the risk of collateral damage at the same time. The cartridge is therefore ideally suited for tactical scenarios.

Item No. 231 94 50 // Ballistic data page 85

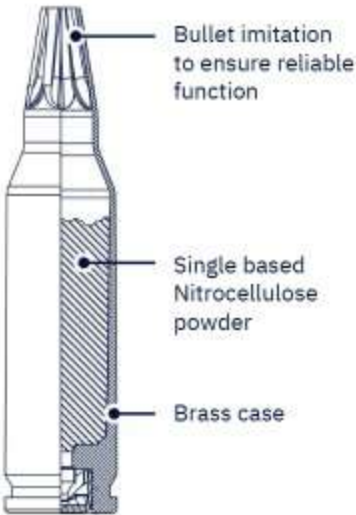


# 4.6mmx30 DM18 BLANK



The DM18 is currently the blank cartridge used by the German Armed Forces in 4.6x30 calibre. It was engineered and qualified to meet the highly technical requirements of the German Armed Forces. The cartridge is used across the board by all German military police corps and is explicitly designed for the Heckler & Koch MP7 A2 personal defence weapon to guarantee safe firearm functionality. A suitable blank cartridge device is required to ensure that the MP7 functions properly. The blank cartridge is also completely suitable for indoor shooting ranges or training facilities.

Item No. 231 75 53



4.6mmx30 DM41 DEA	
Bullet	Solid 2.0 g / 31 gr
Bullet material	Tombac
Primer / Propellant powder	SINTOX® / Double based Nitrocellulose powder
Case material	Brass
Cartridge weight	approx. 6.3 g
Net. explosive weight	approx. 0.6 g
Term of Reference	Technical Terms of Delivery
Temperature Range	-30°C to +52°C
Mean chamber pressure	max. 4000 bar (21°C)
Velocity v <sub>10</sub> / Energy	678 m/s (2224 fps) / 460 J / 180mm Barrel
Accuracy at 100 m	s <sub>a</sub> ≤ 30 mm, 30 Cart. / 180mm Barrel
Packaging / Weight	40pcs. Folding Box / approx. 0,3 kg / 1800pcs. M2A1 Metal Box/approx. 15,7kg

4.6mmx30 DM18 BLANK	
Primer / Propellant powder	SINTOX® / Single based Nitrocellulose powder
Case material	Brass
Cartridge weight	approx. 4.5g
Net. explosive weight	approx. 0.3 g
Term of Reference	Technical Terms of Delivery
Temperature Range	-20°C to +40°C
Mean chamber pressure	max. 4000 bar (21°C)
Packaging / Weight	40pcs. Folding Box / approx. 0.3 kg / 3200pcs. Wooden crate / approx. 24 kg







5.56x45  
Proven  
worldwide  
5.56x45

## Used worldwide, appreciated worldwide

The 5.56x45 calibre ammunition is suitable for assault rifles and light machine guns and offers above-average precision and reliability. A large number of different armed forces rely on its performance day in, day out.

RWS GmbH is particularly proud of the variety of solutions in this calibre that we can offer you to fulfill your mission.



# 5.56x45 LF STYX ACTION SX

3.7 g / 57 gr



The 5.56x45 LF Styx SX cartridge is designed for special situations. It is characterised by its excellent deformation in a wide velocity range and therefore guarantees high energy transfer in the target as well as a low background risk. The LF STYX SX is also safe and reliable at longer ranges.

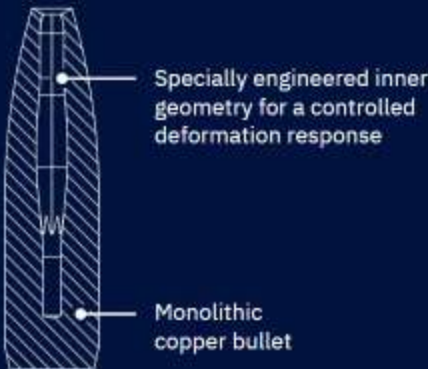
The lead-free copper bullet deforms into six flags on impact, which remain fixed to the bullet body and thus facilitate wound treatment. Suitable for semi-automatic and fully automatic weapons and for different barrel lengths without restrictions.



## 5.56x45 LF STYX ACTION

Bullet	Solid 3.7 g / 57 gr	Term of Reference	Technical Terms of Delivery
Bullet material	Copper	Temperature Range	-54°C to +52°C
Primer / Propellant powder	SINTOX® / Double based Nitrocellulose powder	Mean chamber pressure	max. 4450 bar (21°C)
Case material	Brass	Velocity v <sub>10</sub> / Energy	920 m/s (3018 fps) / 1566 J / 508 mm Barrel
Cartridge weight	approx. 12.3 g	Accuracy at 100 m	s <sub>a</sub> ≤ 22 mm, 30 Cart. 480 mm Gun barrel G36A4
Net. explosive weight	approx. 1.8 g	Packaging / Weight	30pcs. Folding Box / approx. 0.4 kg 900pcs. Cardboard Box / approx. 12 kg

Item No. 242 44 60 // Ballistic data page 87

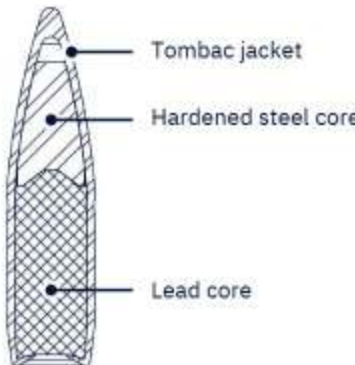


Shot at gelatine block 20% behind 6mm laminated glass pane



# 5.56x45 NATO BALL

4.0 g / 62 gr (SS109)



The 5.56x45 NATO Ball is the standard tactical military cartridge for the NATO alliance and its partners. It is engineered for flawless functionality in all NATO-approved standard firearms.

The bullet design corresponds to the SS109 and M855 bullet types and consists of two bullet cores with a tail cover, with a hardened steel front core and a lead rear core. SINOXID primer technology is used for the load to guarantee reliable ignition even under the most adverse conditions. A REACH-compliant nitrocellulose powder (two-base) is used as the propellant, which enables effective use of the cartridge in a temperature range from -54°C to +52°C. It is also waterproof and fully compliant with AEP-97 (M-CMOPI).



## 5.56x45 NATO BALL (SS109)

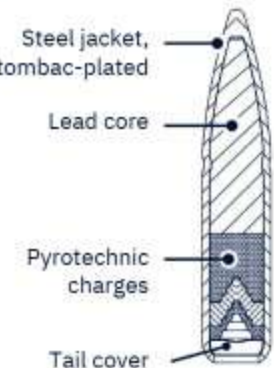
Bullet	Double-core 4.0 g / 62 gr (SS109)
Bullet material	Lead / Steel (hardened) / Tombac
Primer / Propellant powder	SINOXID® / Double based Nitrocellulose powder
Case material	Brass
Cartridge weight	approx. 12 g
Net. explosive weight	approx. 1.8 g
Term of Reference	Technical Terms of Delivery
Temperature Range	-54°C to +52°C
Mean chamber pressure	max. 4450 bar (21°C)
Velocity v <sub>10</sub> / Energy	920 m/s (3018 fps) / 1566 J / 508 mm Barrel
Accuracy at 300 m	s <sub>V</sub> s <sub>H</sub> ≤ 100 mm, 30 Cart. 508 mm Barrel
Penetration at 570 m	3.5 mm (S235JR) / +0.5mm Aluminium, 508 mm Barrel
Packaging / Weight	30pcs. Folding Box / approx. 0.4 kg 870pcs. M2A1 Metal Box/approx. 13.9 kg

## 5.56x45 NATO TRACER

Bullet	Tracer 4.1 g / 63 gr
Bullet material	Lead / Steel (tombac-plated) Pyrotechnic charge
Primer / Propellant powder	SINOXID® / Double based Nitrocellulose powder
Case material	Brass
Cartridge weight	approx. 12.2 g
Net. explosive weight	approx. 2.1 g
Term of Reference	MCMOPI / AOP 4172
Temperature Range	-54°C to +52°C
Mean chamber pressure	max. 4450 bar (21°C)
Velocity v <sub>10</sub> / Energy	885 m/s (2904 fps) 1606 J / 508 mm Barrel
Accuracy at 300 m	s <sub>V</sub> s <sub>H</sub> ≤ 160 mm, 30 Cart. 508 mm Barrel
Tracer visibility	13 m to 140 m / Colt M16A2
Minimum tracer distance	≥ 600 m / Colt M16A2
Tracer colour	Red
Packaging / Weight	30pcs. Folding Box / approx. 0.4 kg 870pcs. M2A1 Metal box /approx. 13.8 kg

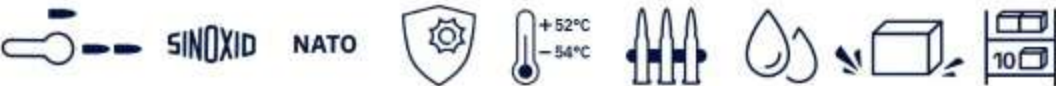
# 5.56x45 NATO TRACER

4.1 g / 63 gr



The 5.56x45 NATO Tracer is the standard tactical military tracer cartridge for the NATO alliance and its partners. Its compatibility with all NATO firearms is therefore guaranteed. Accordingly, the cartridge can be used for mission scenarios and in training.

The bullet itself consists of several components: jacket, lead core, pyrotechnic charges and a cap. It has a dark tracer that conceals the shooter's position. The visible tracer begins at a range of 13 m to 140 m and illuminates up to a distance of at least 600 m. The cartridge is suitable for use in the most adverse environments and under the harshest climatic conditions in a temperature range from -54°C to +52°C. It is also fully compliant with AEP-97 (M-CMOPI).



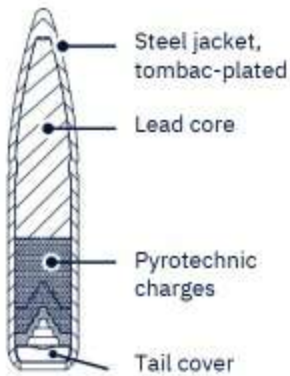


# 5.56x45 NATO IR TRACER

4.1 g / 63 gr



The 5.56x45 NATO IR Tracer has a special tracer that can only be observed with night vision devices. It is tuned so that the shooter can follow the tracer without being dazzled. The shooter keeps the target in view. The NATO IR Tracer is a tactical instrument, especially designed for the use at night. For the shooter, the tracer burns from the muzzle up to a distance of ≥ 600m. When observing from the side, there is a distance between the muzzle and the infrared tracer that is not visible. This means that the firing position cannot be localised by lateral observation.



## 5.56X45 NATO IR TRACER

Bullet	Tracer 4.1 g / 63 gr	Term of Reference	MCMOP1 / AOP 4172
Bullet material	Lead / Steel (tombac-plated) Pyrotechnic charge	Temperature Range	-54°C to +52°C
Primer / Propellant powder	SINOXID* / Double based Nitrocellulose powder	Mean chamber pressure	max. 4450 bar (21°C)
Case material	Brass	Velocity v <sub>10</sub> / Energy	885 m/s (2904 fps) 1606 J / 508 mm Barrel
Cartridge weight	approx. 12.2 g	Accuracy at 300 m	s <sub>y</sub> s <sub>H</sub> ≤ 160 mm, 508 mm Barrel
Net. explosive weight	approx. 2.1 g	Minimum tracer distance	600 m / M16A2
		Packaging / Weight	30pcs. Folding Box / approx. 0.4 kg 870pcs. M2A1 Metal box / approx. 13.8 kg





# 5.56x45 BLANK



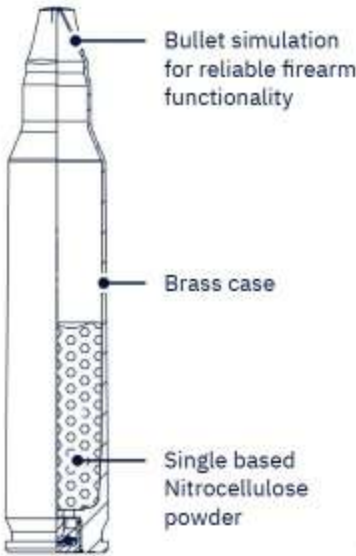
The 5.56x45 Blank is engineered for military training and simulation scenarios. It is intended in particular for use in the area of force-on-force training. It is equally compatible with semi-automatic and fully automatic firearms.

A suitable manoeuvre cartridge device is required to ensure that the firearm functions properly. The heavy metal-free SINTOX primer and REACH-compliant propellant powder minimise the user's exposure to harmful substances. With the applied sealing in the imitation bullet (lacquer) and the ring joint of the primer cap (ring joint lacquer), it guarantees safe functionality even under the most adverse circumstances such as strong fluctuations in temperature and weather conditions.

Item No. 243 12 21



5.65x45 BLANK	
Primer / Propellant powder	SINOXID® / Single-base Nitrocellulose powder
Case material	Brass
Cartridge weight	approx. 8.0 g
Net. explosive weight	approx. 1.8 g
Term of Reference	Technical Terms of Delivery
Temperature Range	-20°C to +40°C
Mean chamber pressure	max. 4050 bar (21°C)
Packaging / Weight	30pcs. Folding Box / approx. 0.25 kg 900pcs. M2A1 Metal box/approx. 10kg)



# 5.56mmx45 DM18A1 BLANK



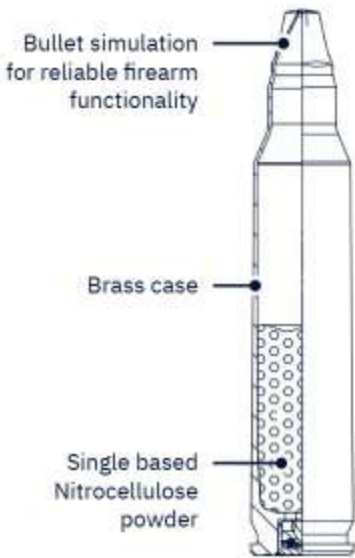
The 5.56x45 DM18A1 blank cartridge is engineered for training and simulation scenarios in the German Armed Forces. It was specially developed for the G36 aussault rifles, but is also compatible with all introduced semi-automatic and fully automatic weapons in 5.56x45 calibre. A suitable blank cartridge device is required to ensure that the firearm functions properly.

The heavy metal-free SINTOX primer and REACH-compliant propellant powder minimise the user's exposure to harmful substances. With the applied sealing in the imitation bullet (lacquer) and the ring joint of the primer cap (ring joint lacquer), it guarantees safe functionality even under the most adverse circumstances such as strong fluctuations in temperature and weather conditions.

Item No. 242 89 17



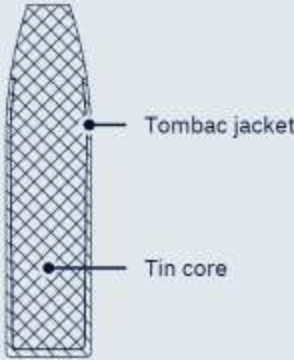
5.56mmx45 DM18 BLANK	
Primer / Propellant powder	SINTOX® / Single-base Nitrocellulose powder
Case material	Brass
Cartridge weight	approx. 8.0 g
Net. explosive weight	approx. 0.5 g
Term of Reference	Technical Terms of Delivery
Temperature Range	-20°C to +40°C
Mean chamber pressure	max. 4050 bar (21°C)
Packaging / Weight	30pcs. Folding Box / approx. 0.25 kg 1800pcs. Wooden crate/approx. 19 kg





# 5.56x45 TRAINING HV SX

4.0 g / 62 gr



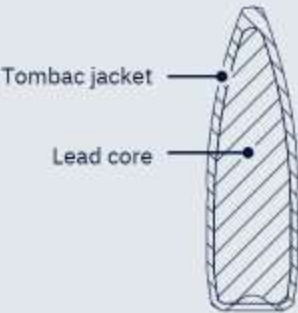
The 5.56x45 TRAINING HV SX is a lead free training cartridge for law enforcement and military users. The semi jacket bullet weighing 4.0 g has a tin core encased in a tombac jacket. The exposed projectile core and optimised projectile geometry minimise the risk of ricochets. The cartridge is also ideal for enclosed shooting and training facilities thanks to the combination of SINTOX primer and REACH-compliant propellant powder.



Item No.231 92 31 // Ballistic data page 86

# 5.56x45 FMJ

3.56 g / 55 gr (M193)



The 5.56x45 FMJ M193 is probably the oldest and most widely used load in the 5.56x45 calibre. The cartridge is equally suited to tactical use and training. The 3.56 g full metal jacket soft core bullet significantly reduces wear on shooting ranges and bullet traps in a direct comparison with the SS109 or double core. Its bullet consists of a tombac jacket encasing a lead core.



Item No.242 59 31 // Ballistic data page 86

5.56x45 TRAINING HV SX	
Bullet	Jacket soft core 4.0 g / 62 gr
Bullet material	Tin / Tombac
Primer / Propellant powder	SINTOX® / Double based Nitrocellulose powder
Case material	Brass
Cartridge weight	approx. 12.4 g
Net. explosive weight	approx. 1.8 g
Term of Reference	Technical Terms of Delivery
Temperature Range	-20°C to +40°C
Mean chamber pressure	max. 4000 bar (21°C)
Velocity v <sub>10</sub> / Energy	850 m/s (2788 fps) / 1445 J / 508 mm Barrel
Accuracy at 100 m	s <sub>a</sub> ≤ 35 mm, 30 Cart. 508 mm Barrel
Packaging / Weight	30pcs. Folding Box / approx. 0.4 kg 900pcs. Cardboard Box / approx. 11,5 kg

5.56x45 FMJ (M193)	
Bullet	Full Metal Jacket 3.56 g / 55 gr
Bullet material	Lead / Tombac
Primer / Propellant powder	SINOXID® / Double based Nitrocellulose powder
Case material	Brass
Cartridge weight	approx. 12 g
Net. explosive weight	approx. 1.8 g
Term of Reference	MCMOPI / AOP 4172
Temperature Range	-54°C to +52°C
Mean chamber pressure	max. 4050 bar (21°C)
Velocity v <sub>10</sub> / Energy	990 m/s (3248 fps) 1765 J / 508 mm Barrel (12" twist)
Accuracy at 300m	s <sub>v</sub> s <sub>H</sub> ≤ 85 mm, 30 Cart. 508 mm Barrel
Packaging / Weight	30pcs. Folding Box / approx. 0.4 kg 900pcs. M2A1 Metal box/ approx. 13,8 kg





## 5.56mmx45 DM11A1 DOUBLE CORE

4.0 g / 62 gr



The DM11A1 cartridge is a low-emission tactical cartridge in 5.56x45 calibre, which is specially engineered for the requirements of the German Armed Forces. The cartridge was engineered according to their technical requirements and is therefore intended for firearms used by the German Armed Forces in this calibre. It is equally compatible with semi-automatic and fully automatic firearms. The bullet design corresponds to the SS109 and M855 bullet types and consists of two bullet cores with a tail cover, with a hardened steel front core and a lead rear core. To reduce emissions, the bullet is fully encapsulated and the cartridge is equipped with a SINTOX® primer.



Item No.231 91 55 // Ballistic data page 87

## 5.56mmx45 DM41A1 SOFT CORE

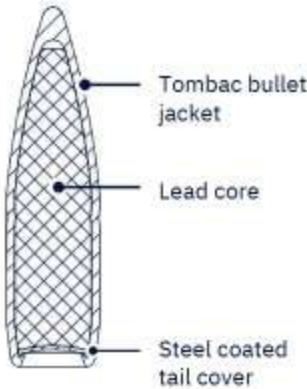
4.0 g / 62 gr



The 5.56x45 DM41A1 is a cartridge exclusively used by the German Armed Forces. It was engineered for both tactical use and training according to the technical requirements of BAAINBw (Federal Office of Bundeswehr, Equipment, Information Technology and In-Service Support). The cartridge consists of a fully encapsulated full metal jacket soft core with a bullet weight of 4.0 g. It reduces pollutant emissions to an absolute minimum in combination with the patented heavy metal-free SINTOX® primer.

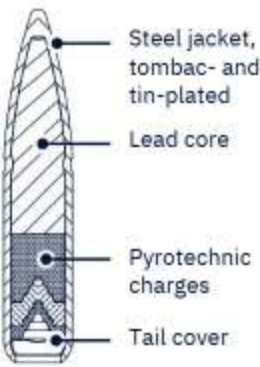


Item No.231 91 24 // Ballistic data page 87



## 5.56mmx45 DM21A1 SOFT CORE TRACER

4.1 g / 63 gr



The 5.56x45 DM21A1 is the standard tactical cartridge used by the German Armed Forces. Its compatibility with all NATO firearms is guaranteed. The cartridge can be used for mission scenarios and in training.

The bullet itself consists of several components: jacket, lead core, pyrotechnic charges and a cap. It has a dark tracer that conceals the shooter's position. The visible tracer begins at a range of 13 m to 140 m and illuminates up to a distance of at least 600 m. The cartridge is suitable for use in the most adverse environments and under the harshest climatic conditions in a temperature range from -54°C to +63°C. It is also fully compliant with AEP-97 (M-CMOPI).



### 5.56mmx45 DM21A1

Bullet	Tracer 4.1 g / 63 gr
Bullet material	Lead / Steel (tombac- and tin-plated), Pyrotechnic charge
Primer / Propellant powder	SINTOX® / Double based Nitrocellulose powder
Case material	Brass
Cartridge weight	approx. 12.2 g
Net. explosive weight	approx. 2.1 g

Term of Reference	Technical Terms of Delivery
Temperature Range	-54°C to +63°C
Mean chamber pressure	max. 4450 bar (21°C)
Velocity v <sub>10</sub> / Energy	> 880 m/s (2887 fps) / 1588 J / 508 mm Barrel
Accuracy at 100 m	s <sub>a</sub> ≤ 35 mm, 30 Cart. 508 mm Barrel
Tracer visibility	13 m to 140 m / Heckler & Koch G36
Minimum tracer distance	600 m / Heckler & Koch G36 A4
Tracer colour	Red
Packaging / Weight	30pcs. Folding Box / approx. 0.4 kg 180pcs. Wooden crate / approx. 29 kg

Item No. 231 89 82 // Ballistic data page 87

### 5.56mmx45 DM11A1

Bullet	Double core 4.0 g / 62 gr
Bullet material	Lead/ Steel (hardened) / Tombac
Primer / Propellant powder	SINTOX® / Double based Nitrocellulose powder
Case material	Brass
Cartridge weight	approx. 11.9 g
Net. explosive weight	approx. 1.8 g
Term of Reference	Technical Terms of Delivery
Temperature Range	-54°C to +63°C
Mean chamber pressure	max. 4050 bar (21°C)
Velocity v <sub>10</sub> / Energy	>880 m/s (2887 fps) / 1549 J / 508 mm Barrel
Accuracy at 100 m	s <sub>a</sub> ≤ 22 mm, 30 Cart. 508 mm Barrel
Penetration at 570 m	3,5 mm (S235JR) +0.5mm Aluminium, 508 mm Barrel
Packaging / Weight	30pcs. Folding Box / approx. 0.4 kg 1800pcs. Wooden crate / approx. 29 kg

### 5.56mmx45 DM41A1

Bullet	Full metal jacket 4.0 g / 62 gr
Bullet material	Lead / Tombac / Steel (coated)
Primer / Propellant powder	SINTOX® / Double based Nitrocellulose powder
Case material	Brass
Cartridge weight	approx. 12.3 g
Net. explosive weight	approx. 1.8 g
Term of Reference	Technical Terms of Delivery
Temperature Range	-54°C to +63°C
Mean chamber pressure	max. 4450 bar (21°C)
Velocity v <sub>10</sub> / Energy	>900 m/s (2952 fps) / 1620 J / 508 mm Barrel
Accuracy at 100 m	s <sub>a</sub> ≤ 22 mm, 30 Cart. 508 mm Barrel
Packaging / Weight	30pcs. Folding Box / approx. 0.4 kg 1800pcs. Wooden crate / approx. 29 kg





Strong  
precise  
proven

7.62  
51

## Versatility in use

The 7.62x51 calibre is the NATO's oldest long rifle calibre. Since the end of the 1950s, armies worldwide have relied on this all-round calibre. This calibre covers almost all infantry applications - from use in machine guns to precision rifles.

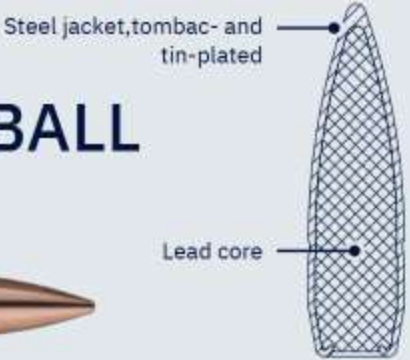
The calibre has been developed over the decades in application. Today, in addition to standard ammunition types specifically developed products for training, deployment and special use are available. From the armour-piercing precision bullet to the reduced-pollutant manoeuvre cartridge, everything is available in calibre 7.62x51.





## 7.62x51 NATO BALL

9.45 g / 146 gr (M80)



The NATO Ball is the standard 7.62x51 calibre tactical cartridge for many military users. It is engineered for flawless functionality in all NATO-approved standard firearms and can be used just as effectively for mission and training purposes.

The projectile design is equivalent to the M80 bullet type with a weight of 9.45 g. It consists of a lead core, encased in a full metal jacket. It functions flawlessly in a temperature range from -54°C to +52°C. The cartridge is sealed to prevent the ingress of water or moisture and is fully compliant with the requirements of AEP-97 (M-CMOPI).



Item No.242 68 29 // Ballistic data page 88

### 7.62x51 NATO BALL

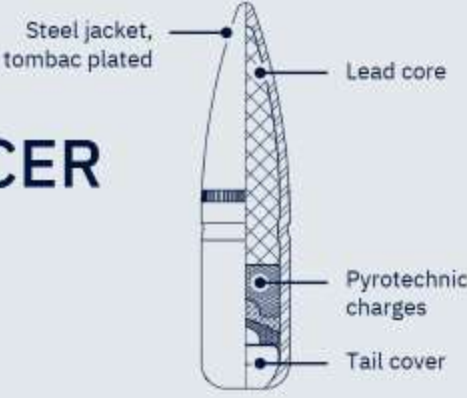
Bullet	Full Metal Jacket	9.45 g / 146 gr
Bullet material	Lead / Steel (tombac-plated)	
Primer / Propellant powder	SINOXID® / Double based Nitrocellulose powder	
Case material	Brass	
Cartridge weight	approx. 24 g	
Net. explosive weight	approx. 2.9 g	
Term of Reference	MCMOPI / AOP-2310	
Temperature Range	-54°C to +52°C	
Mean chamber pressure	max. 4450 bar (21°C)	
Velocity v <sub>10</sub> / Energy	> 820 m/s (2690 fps) / 3177 J / 562 mm Barrel	
Accuracy at 485 m	s <sub>V</sub> s <sub>H</sub> ≤ 176 mm, 30 Cart. 562 mm Barrel	
Penetration at 550 m	3,5mm SR235JR	
Packaging / Weight	20pcs. Folding Box / approx. 0.5 kg 500pcs. M2A1 Metal box / approx. 17 kg	

### 7.62x51 NATO TRACER (M62)

Bullet	Tracer	9.1 g / 140 gr
Bullet material	Lead / Steel (tombac-plated), Pyrotechnic charges	
Primer / Propellant	SINOXID® / Double based Nitrocellulose powder	
Case material	Brass	
Cartridge weight	approx. 24.0 g	
Net. explosive weight	approx. 3.4 g	
Term of Reference	MCMOPI / AOP-2310	
Temperature Range	-54°C to +52°C	
Mean chamber pressure	max. 4450 bar (21°C)	
Velocity v <sub>10</sub> / Energy	>839 m/s (2690 fps) / 3059 J / 562 mm Barrel	
Accuracy at 485 m	s <sub>V</sub> s <sub>H</sub> ≤ 265 mm, 30 Cart. 562 mm Barrel	
Tracer visibility	13 m to 140 m	
Minimum tracer distance	≥775m	
Tracer colour	Red	
Packaging / Weight	20pcs. Folding Box / approx. 0.5 kg 500pcs. M2A1 Metal box/approx. 15.2 kg	

## 7.62x51 NATO TRACER

9.1 g / 140 gr (M62)



The 7.62x51 NATO Tracer cartridge is engineered for military use. Its compatibility with all NATO firearms is guaranteed. The cartridge can therefore be used for mission scenarios and in training. The bullet consists of a lead core, bullet jacket and the pyrotechnic charge inserted in the tail.

It has a dark tracer that conceals the shooter's position. The visible tracer begins at a range of 13 m to 140 m and illuminates up to a distance of at least 775 m. The visible pyrotechnic charge glows red. The cartridge is also fully compliant with AEP-97 (M-CMOPI).



Item No.242 70 87 // Ballistic data page 88



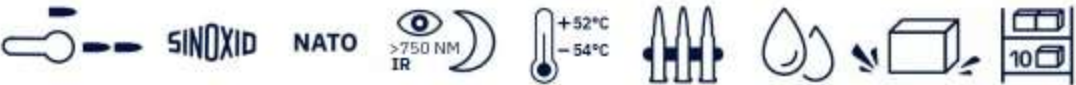
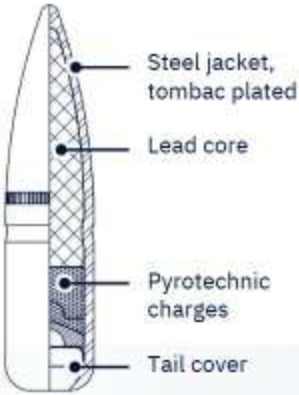


# 7.62x51 NATO IR TRACER

9.1 g / 140 gr



The 7.62x51 NATO IR Tracer has a special tracer, which can only be observed with night vision devices. It is tuned such that the shooter can follow the tracer without being dazzled. Thanks to the possibility of undisturbed target observation with night vision technology, the NATO IR Tracer can be used as an effective tactical combat enhancement in night-time operations. For the shooter, the tracer burns from the muzzle, up to a distance of  $\geq 775\text{m}$ . For side observation a distance is created between the muzzle and the infrared tracer that is not visible. This means that the firing position cannot be localized by lateral observation.



## 7.62x51 NATO IR TRACER

Bullet	Tracer 9.1 g / 140 gr
Bullet material	Lead / Steel (tombac-plated), Pyrotechnic charges
Primer / Propellant	SINOXID® / Double based Nitrocellulose powder
Case material	Brass
Cartridge weight	approx. 24.0 g
Net. explosive weight	approx. 3.4 g

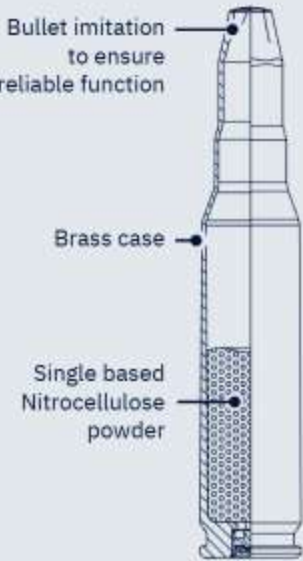
Ballistic data page 88

Term of Reference	MCMOPI / AOP-2310
Temperature Range	-54°C to +52°C
Mean chamber pressure	max. 4450 bar (21°C)
Velocity $v_{10}$ / Energy	$\geq 820$ m/s (2690 fps) / 3059 J / 562 mm Barrel
Accuracy at 485 m	sv, sh $\leq 265$ mm, 30 Cart. 562 mm Barrel
Minimum tracer distance	775 m (Heckler & Koch G27 A1)
Packaging / Weight	20pcs. Folding Box / approx. 0.5 kg 500pcs. M2A1 Metal box/approx. 15.2kg





## 7.62x51 BLANK



The 7.62x51 Blank manoeuvre cartridge is engineered for military training and simulation scenarios. It is equally compatible with semi- and fully automatic firearms. A suitable manoeuvre cartridge device is required to ensure that the firearm functions properly.

With the applied sealing in the imitation bullet (lacquer) and the ring joint of the primer cap (ring joint lacquer), it guarantees safe functionality even under the most adverse circumstances such as strong fluctuations in temperature and weather conditions from -20°C to +40°C.



Item No. 242 94 05

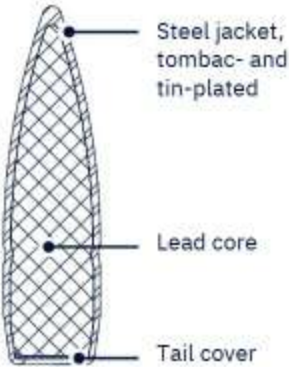
## 7.62mmx51 DM111A2 SOFT CORE

9.55 g / 147 gr



The DM111A2 is the standard cartridge for tactical use and training within the German Armed Forces. It was engineered and qualified to meet their high technical requirements. The product is also fully compliant with the requirements of AEP-97 (M-CMOPI). It is fully compatible with all semi-automatic and fully automatic weapons in this calibre introduced by the German Armed Forces.

It uses a completely encapsulated full metal jacket bullet with a lead core. The bullet jacket is made of tin-plated, tombac-plated steel. SINTOX primer technology and a fully encapsulated bullet minimise the user's exposure to harmful emissions. The cartridge is therefore also suitable for use in indoor facilities.



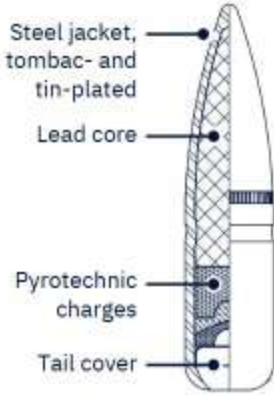
Item No. 212 42 03 // Ballistic data page 88

7.62x51 BLANK	
Primer / Propellant powder	SINOXID® / Single based Nitrcellulose powder
Case material	Brass
Cartridge weight	approx.13.2 g
Net. explosive weight	approx. 0.9 g
Term of Reference	Technical Terms of Delivery
Temperature Range	-20°C to +40°C
Mean chamber pressure	max. 1090 bar (21°C)
Packaging / Weight	20pcs. Folding Box / approx. 0.3 kg 500pcs. M2A1 Metal box / approx. 9.7 kg

7.62mmx51 DM111A2	
Bullet	Full Metal Jacket 9.55 g / 147 gr
Bullet material	Lead / Steel (tombac- and tin-plated)
Primer / Propellant	SINTOX® / Double based Nitrocellulose powder
Case material	Brass
Cartridge weight	approx. 24.5 g
Net. explosive weight	approx. 2.8 g
Term of Reference	Technical Terms of Delivery
Temperature Range	-54°C to +63°C
Mean chamber pressure	max. 4450 bar (21°C)
Velocity v <sub>10</sub> / Energy	>802 ms (2631 fps) / 2926 J / 562 mm Barrel
Accuracy at 100 m	s <sub>a</sub> ≤ 16 mm, 30 Cart. 562 mm Barrel
Penetration at 550 m	3,5mm SR235JR
Packaging / Weight	20pcs. Folding Box / approx. 0,5 kg 1000pcs. Wooden crate / approx. 31 kg



<b>7.62mmx51 DM21A3</b>	
Bullet	Tracer 9.1 g / 140 gr
Bullet material	Lead / Steel (tombac- and tin-plated) Pyrotechnic charges
Primer / Propellant powder	SINTOX® / Double based Nitrocellulose powder
Case material	Brass
Cartridge weight	approx. 24.0 g
Net. explosive weight	approx. 3.3 g
Term of Reference	Technical Terms of Delivery
Temperature Range	-54°C to +63°C
Mean chamber pressure	max. 4450 bar (21°C)
Velocity v <sub>10</sub> / Energy	> 802 m/s (2631 fps) / 2926 J / 562 mm Barrel
Accuracy at 100m	s <sub>a</sub> ≤ 35 mm, 562 mm Barrel
Tracer visibility	13 m – 140 m
Minimum tracer distance	775 m
Trace burning time min.	1.6 s
Tracer colour	Red
Packaging / Weight	20pcs. Folding Box / approx. 0.5 kg 1000pcs. Wooden crate / approx. 30,8 kg



## 7.62mmx51 DM21A3 SOFT CORE TRACER

9.1 g / 140 gr



The 7.62x51 DM21A3 is the standard tracer round for tactical use and training within the German Armed Forces. It was engineered and qualified to meet their high technical requirements.

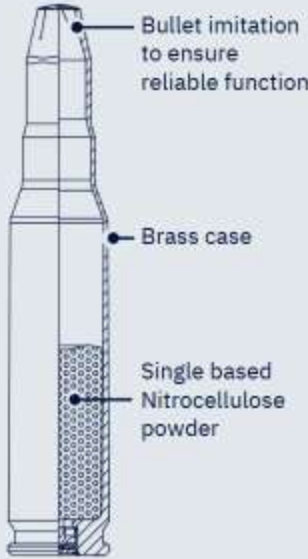
It is fully compatible with all semi-automatic and fully automatic weapons in this calibre introduced by the German Armed Forces. It has a dark tracer that conceals the shooter's position. The visible tracer begins at a range of 13 m to 140 m and illuminates up to a distance of at least 775 m. The visible pyrotechnic charge glows red.



Item No. 212 43 35 // Ballistic data page 88

<b>7.62mmx51 DM68A1</b>	
Primer / Propellant powder	SINTOX® / Single based Nitrcelluose powder
Case material	Brass
Cartridge weight	approx.13.2 g
Net. explosive weight	approx. 0.9 g
Term of Reference	Technical Terms of Delivery
Temperature Range	-20°C to +40°C
Mean chamber pressure	max. 1090 bar (21°C)
Packaging / Weight	20pcs. Folding Box / approx. 0.3 kg 1000pcs. Wooden crate / approx. 15 kg

## 7.62mmx51 DM68A1



The DM68 is the standard manoeuvre cartridge for training and simulation scenarios within the Bundeswehr. It was engineered and qualified to meet their high technical requirements of the German Armed Forces. It is equally compatible with semi-automatic and automatic firearms. A suitable manoeuvre cartridge device is required to ensure that the firearm functions properly.



Item No. 242 73 82



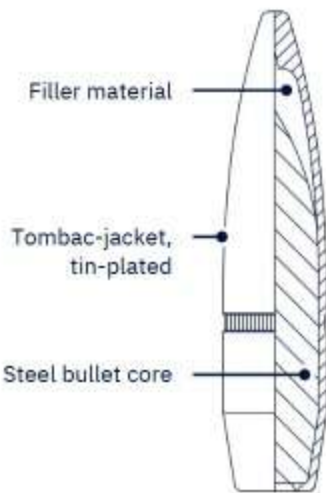


# Powerful 12.7x99

Since its invention, the 12.7x99 calibre has impressed military users with its ability to penetrate hard targets and its long operational range. No other calibre in the world is as associated with a machine gun as the 12.7x99 alias .50 BMG. Whereby the BMG stands for Browning (inventor) Machine Gun.

Our ammunition in this calibre is characterised by outstanding precision and exceptional reliability even under the most adverse conditions. In addition, all our solutions are equipped with our patented, low-emission and heavy-metal-free SINTOX® primer.



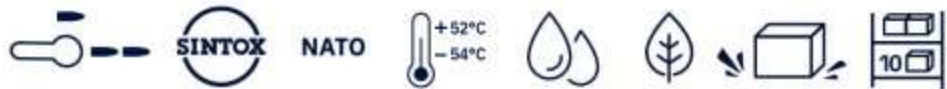


# 12.7x99 LF BALL SX

42.5 g / 656 gr



The 12.7x99 LF Ball SX is a lead-free and low-emission load that is engineered for military users. The bullet is based on a steel core, which is completely encased in a tombac jacket. The sheath itself is also tin-plated. The cartridge is intended for use in heavy machine guns such as the Browning M2. It describes the same trajectory as the 12.7x99 LF Tracer SX, which is also available.



Ballistic data page 91

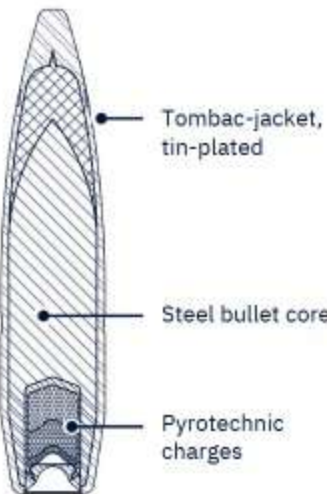
# 12.7x99 LF TRACER SX

40.5 g / 625 gr



The 12.7x99 LF Tracer SX was designed and developed for military users. It is fully compatible with heavy machine guns. The cartridge can therefore be used for operational scenarios and in training.

A bullet jacket with a soft iron core and a pyrotechnic charge is inserted into it. It has a dark tracer that conceals the shooter's position. The visible tracer starts at a range of 0 m to 200 m and illuminates up to a distance of at least 1,500 m.



\* Image 75% of original size // Ballistic data page 90

## 12.7x99 LF BALL SX

Bullet	Full Metal Jacket 42.5 g / 656 gr
Bullet material	Steel / Tombac (coated) / Filler material
Primer / Propellant powder	SINTOX® / Double based Nitrocellulose powder
Case material	Brass
Cartridge weight	approx. 116.0 g
Net. explosive weight	approx. 17g
Term of Reference	Technical Terms of Delivery
Temperature Range	-54°C to +52°C
Mean chamber pressure	≤ 4500 bar (21°C)
Velocity v <sub>10</sub> / Energy	890 m/s (2920 fps) / 16832 J / 1143 mm Barrel
Accuracy at 485 m	s <sub>V</sub> = 265 mm / s <sub>H</sub> ≤ 265 mm 1143 mm Barrel
Packaging / Weight	M2A1 Metal Box

## 12,7x99 LF TRACER SX

Bullet	Tracer 40.5 g / 625 gr
Bullet material	Steel (coated) / Tombac (tin-plated) / Filler material / Pyrotechnic charge
Primer / Propellant powder	SINTOX® / Double based Nitrocellulose powder
Case material	Brass
Cartridge weight	approx. 113.0 g
Net. explosive weight	approx. 16.5 g
Term of Reference	Technical Terms of Delivery
Temperature Range	-54°C to +52°C
Mean chamber pressure	≤ 4500 bar (21°C)
Velocity v <sub>10</sub> / Energy	890 m/s (2920 fps) / 16040 J / 1143 mm Barrel
Accuracy at 485 m	s <sub>V</sub> = 353 mm / s <sub>H</sub> ≤ 353 mm / 1143 mm Barrel
Minimum tracer distance	1500 m
Tracer colour	Red
Packaging / Weight	10pcs. Folding Box/ approx. 1.2 kg 100pcs. M2A1 Metal box / approx. 15.2kg

# 12.7x99 LF IR TRACER SX

40.5 g / 625 gr



The 12.7x99 LF IR Tracer SX is the next generation of lead-free tracer ammunition, specially developed for use in difficult lighting conditions. Our IR Tracer is only visible with night vision devices and offers decisive advantages in the dark.

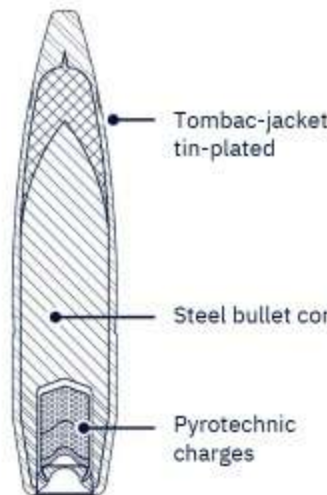
For the shooter, the tracer burns from the muzzle. When observing from the side, there is a distance between the muzzle and the infrared tracer that is not visible. This means that the firing position cannot be localised by lateral observation. Due to the possibility of undisturbed target observation with night vision technology, the LF IR TRACER SX can be used as an effective combat enhancement in night operations. The projectile consists of 3 essential components: A projectile jacket with a soft iron core and a pyrotechnic charge is inserted into it.

Ballistic data page 90



## 12,7x99 LF IR TRACER SX

Bullet	Tracer 40.5 g / 625 gr
Bullet material	Steel (coated) / Tombac (tin-plated) / Filler material / Pyrotechnic charge
Primer / Propellant powder	SINTOX® / Double based Nitrocellulose powder
Case material	Brass
Cartridge weight	approx. 113.0 g
Net. explosive weight	approx. 16.5 g
Term of Reference	Technical Terms of Delivery
Temperature Range	-54°C to +52°C
Mean chamber pressure	≤ 4500 bar (21°C)
Velocity v <sub>10</sub> / Energy	890 m/s (2920 fps) / 16040 J / 1143 mm Barrel
Accuracy at 485 m	s <sub>V</sub> = 353 mm / s <sub>H</sub> ≤ 353 mm / 1143 mm Barrel
Minimum tracer distance	1500 m
Packaging / Weight	M2A1 Metal box





12.7x99 HC SX

47.5 g / 733 g



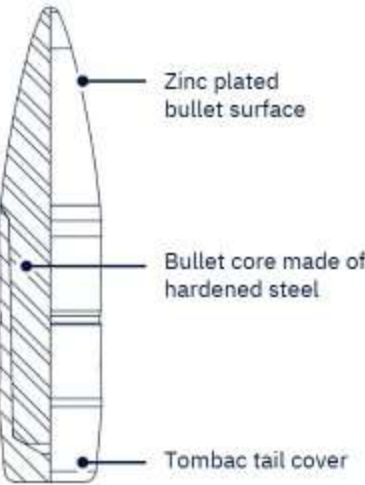
The 12.7x99 HC SX tactical cartridge is designed for military use. It is designed for use with repeater rifles and semi-automatic firearms for precision shooters and snipers. It has a hard core bullet consisting of a hardened steel core with a jacket. This guarantees utterly reliable effectiveness against hard targets.

The cartridge can be used without restriction in a temperature range from -54°C to +52°C. It is also sealed against the ingress of water and moisture. The use of components without lead or heavy metals minimises exposure.



12.7x99 HC SX

Bullet	Full Metal Jacket 47.5 g / 733 gr	Term of Reference	Technical Terms of Delivery
Bullet material	Steel (zinc-plated) / Tombac (zinc-plated)	Temperature Range	-54°C to +52°C
Primer / Propellant powder	SINTOX® / Double based Nitrocellulose powder	Mean chamber pressure	≤ 4500 bar (21°C)
Case material	Brass	Velocity v <sub>10</sub> / Energy	895 m/s (2936 fps) / 19024 J / 1143 mm Barrel
Cartridge weight	approx. 122 g	Accuracy at 300 m	s <sub>V</sub> s <sub>H</sub> ≤ 75 mm, 3x10 Cart. 1143 mm Barrel
Net. explosive weight	approx. 17 g	Penetration at 100 m	18 mm Armour steel RHA 1143 mm Barrel
		Packaging / Weight	10pcs. Folding Box / approx. 1.2 kg 100pcs. M2A1 Metal Box/approx. 15.7 kg



12.7x99 SR SOLID SX

45.2 g / 698 gr

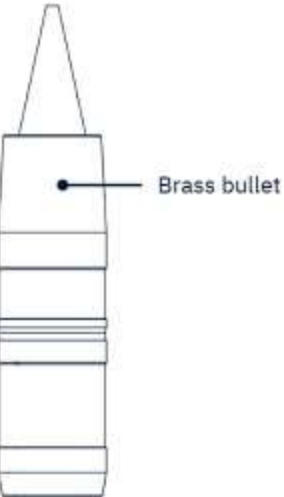


The 12.7x99 SR Solid SX is a lead-free training and duty cartridge for law enforcement and military users. The twisted lead-free brass bullet has a special bullet geometry that greatly increases the air resistance of the bullet in flight. As a result, the danger zone and the maximum flight range can be reduced to 3.8 km. A corresponding weapon function from heavy machine guns of the FN Browning M2 type is guaranteed.



12.7x99 SR SOLID SX

Bullet	Solid, 45,2 g / 698 gr	Term of Reference	Technical Terms of Delivery
Bullet material	Brass	Temperature Range	-54°C to +52°C
Primer / Propellant powder	SINTOX® / Double based Nitrocellulose powder	Mean chamber pressure	≤ 4500 bar (21°C)
Case material	Brass	Velocity v <sub>10</sub> / Energy	872 m/s (2661 fps) / 17185 J / 1143 mm Barrel
Cartridge weight	approx. 124.4 g	Max. range	≤ 3800m
Net. explosive weight	approx. 16 g	Accuracy at 300 m	Sx; Sy ≤ 90 mm / 1143mm Barrel
		Packaging / Weight	120pcs. M2A1 Metal Box/approx.16,8 kg



\* Image 75% of original size // Ballistic data page 91

Item No. 242 43 30 // Ballistic data page 91



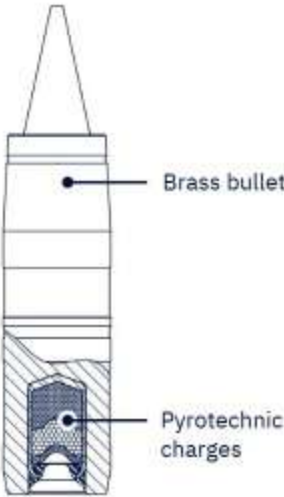
# 12.7x99 SR SOLID TRACER SX

45.8 g / 707 gr



The 12.7 SR Solid Tracer SX is a lead-free training and tactical cartridge for military users. The lead-free bullet made of turned brass has a special bullet geometry that greatly increases the air resistance in flight.

The pyrotechnic charge has a dark ignition tracer that conceals the shooter's position. The visible tracer begins at a range of 0 m to 200 m and illuminates up to a distance of at least 1,000 m, reducing the danger zone and the maximum flight range to 4.0 km. It is fully compatible with heavy machine guns of the FN Bowning M2 type.



12.7x99 SR SOLID TRACER SX			
Bullet	Solid with Tracer, 45.8 g / 707 gr	Term of Reference	Technical Terms of Delivery
Bullet material	Brass /Steel (coated)/ Pyrotechnic charge	Temperature Range	-54°C to +52°C
Primer / Propellant powder	SINTOX* / Double based Nitrocellulose powder	Mean chamber pressure	≤ 4500 bar (21°C)
Case material	Brass	Velocity v <sub>10</sub> / Energy	862 m/s (2828 fps) 17016 J / 1143 mm Barrel
Cartridge weight	approx. 125 g	Max. range	≤ 4000 m
Net. explosive weight	approx. 16.4 g	Accuracy at 300 m	s <sub>x</sub> s <sub>y</sub> ≤ 110 mm / 1143 mm Barrel
		Minimum tracer distance	1000 m
		Tracer colour	Red
		Packaging / Weight	120pcs. M2A1 Metal box /approx. 16.8 kg

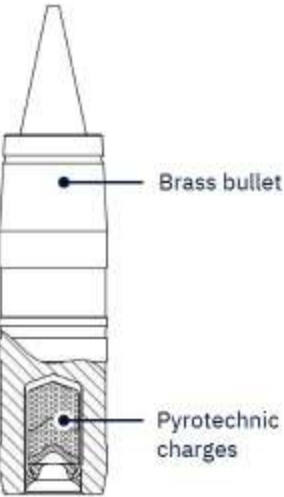
\* Image 75% of original size // Ballistic data page 90

# 12.7x99 SR SOLID IR TRACER SX

45.8 g / 707 gr



Our 12.7x99 SR Solid IR Tracer SX is a specially developed lead-free tracer ammunition to improve night-time shooting training. It combines the improved visual perception of IR tracer technology ammunition with the reduced trajectory range of practice ammunition. The danger zone is limited to 3.8 km. The trajectory of the projectile can only be observed with night vision devices. Training with this ammunition and NVD (Night Vision Device) is easier and offers an effective way to improve your shooting skills. The cartridge enables precise training under realistic conditions, as it is designed for use with heavy machine guns such as the FN Browning M2 or M3.



12.7x99 SR SOLID IR TRACER SX			
Bullet	Solid with Tracer, 45.8 g / 707 gr	Term of Reference	Technical Terms of Delivery
Bullet material	Brass /Steel (coated)/ Pyrotechnic charge	Temperature Range	-54°C to +52°C
Primer / Propellant powder	SINTOX* / Double based Nitrocellulose powder	Mean chamber pressure	≤ 4500 bar (21°C)
Case material	Brass	Velocity v <sub>10</sub> / Energy	862 m/s (2828 fps) 17016 J / 1143 mm Barrel
Cartridge weight	approx. 125 g	Max. range	≤ 4000 m
Net. explosive weight	approx. 16.5 g	Accuracy at 300 m	s <sub>v</sub> s <sub>H</sub> ≤ 200 mm / 1143 mm Barrel
		Minimum tracer distance	1000 m
		Packaging / Weight	120pcs. M2A1 Metal box /approx. 16.8 kg

\* Image 75% of original size // Ballistic data page 90



# 12.7mmx99 DM91A1 SOFT CORE

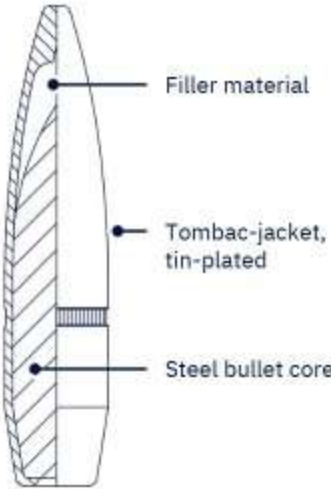
42.5 g / 656 gr



The DM91A1 is a lead-free and low-emission load that is engineered for military users. The bullet is based on a steel core, which is completely encased in a tombac jacket. The sheath itself is also tin-plated. The cartridge is intended for use in heavy machine guns such as the Browning M2 and M3. It describes the same trajectory as the 12.7x99 LF Tracer SX, which is also available.



Item No.243 01 33 // Ballistic data page 91



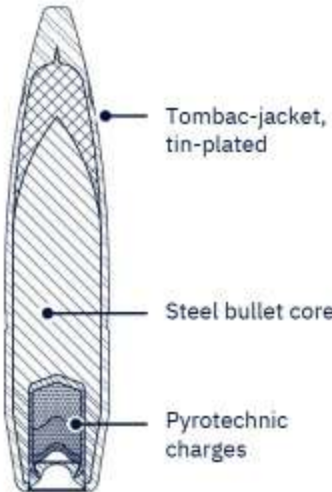
# 12.7mmx99 DM101A1 SOFT CORE TRACER

40.5 g / 625 gr



The 12.7x99 DM101A1 was designed and engineered for military users in the Bundeswehr. The cartridge has obtained full Bundeswehr qualification. It is fully compatible with heavy machine guns. The cartridge is used for mission scenarios and in training.

The bullet itself consists of several components: Steel core, jacket, filler material, pyrotechnic charge carrier with cover cap and pyrotechnic charges. It has a dark tracer that conceals the shooter's position. The visible tracer begins at a range of 0 m to 200 m and illuminates up to a distance of at least 1,500 m.

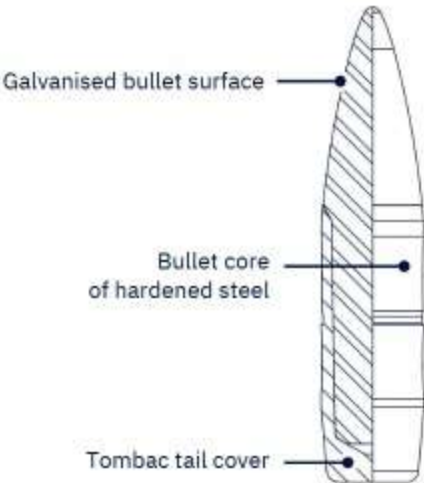


## 12.7mmx99 DM91A1

Bullet	Full Metal Jacket	42.5 g / 656 gr
Bullet material	Steel /Tombac (tin-plated) / Filler material	
Primer / Propellant powder	SINTOX® / Double based Nitrocellulose powder	
Case material	Brass	
Cartridge weight	approx. 116.0 g	
Net. explosive weight	approx. 17 g	
Term of Reference	Technical Terms of Delivery	
Temperature Range	-54°C to +63°C	
Mean chamber pressure	≤ 4500 bar (21°C)	
Velocity v <sub>10</sub> / Energy	890 m/s (2920 fps) / 16832 J / 1143 mm Barrel	
Accuracy at 485 m	s <sub>V</sub> = 160 mm / s <sub>H</sub> ≤ 265 mm	
Packaging / Weight	10pcs. Folding Box / approx. 1.2 kg 100pcs. M2A1 Metal Box /approx. 15.2 kg	

## 12.7mmx99 DM31A1

Bullet	Full Metal Jacket Hard core	47.5 g / 733 gr
Bullet material	Steel (zinc-plated) / Tombac (zinc-plated)	
Primer / Propellant powder	SINTOX® / Double based Nitrocellulose powder	
Case material	Brass	
Cartridge weight	approx. 122 g	
Net. explosive weight	approx. 17 g	
Term of Reference	Technical Terms of Delivery	
Temperature Range	-54°C to +63°C	
Mean chamber pressure	≤ 4500 bar (21°C)	
Velocity v <sub>10</sub> / Energy	895 m/s (2936 fps) / 19024 J / 1143 mm Barrel	
Accuracy at 300 m	s <sub>V</sub> s <sub>H</sub> ≤ 75 mm, 3x10 Cart. 1143 mm Barrel	
Penetration at 100 m	18 mm Armour steel RHA 1143 mm Barrel	
Packaging / Weight	10pcs. Folding Box / approx. 1.2 kg 100pcs. M2A1 Metal Box /approx. 15.7 kg	

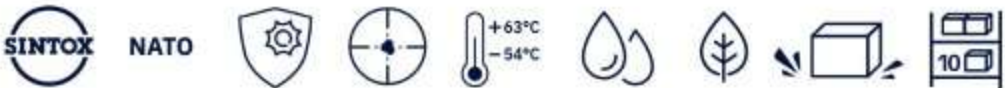


# 12.7mmx99 DM31A1 HARD CORE

47.5 g / 733 gr



The DM31A1 is a lead-free cartridge for the German Armed Forces with enhanced penetration capabilities. It is designed for use with repeater rifles and semi-automatic firearms for precision shooters and snipers. It has a hard core bullet consisting of a hardened steel core with a gas check. This guarantees high effectiveness against hard targets. The use of components without lead or heavy metals minimises exposure.



## 12.7mmx99 DM101A1

Bullet	Tracer 40.5 g / 625 gr
Bullet material	Steel /Tombac (tin-plated) / Filler material / Pyrotechnic charge
Primer / Propellant powder	SINTOX® / Double based Nitrocellulose powder
Case material	Brass
Cartridge weight	approx. 113.0 g
Net. explosive weight	approx. 16.5 g
Term of Reference	Technical Terms of Delivery

Temperature Range	-54°C to +63°C
Mean chamber pressure	max. 4500 bar (21°C)
Velocity v <sub>10</sub> / Energy	890 m/s (2920 fps) / 16040 J / 1143 mm Barrel
Accuracy at 485 m	s <sub>V</sub> = 353 mm / s <sub>H</sub> ≤ 353 mm / 1143 mm Barrel
Tracer visibility	≤ 200 m
Minimum tracer distance	1500 m
Tracer colour	Red
Packaging / Weight	10pcs. Folding Box / approx. 1.2 kg 100pcs. M2A1 Metal Box /approx. 15.2 kg

Item No.243 01 31 // Ballistic data page 91

\* Image 75% of original size Item No.241 31 47 // Ballistic data page 91





Quality made in Switzerland - The professional SWISS P Line convinces by its technological perfection down to the smallest detail. For best accuracy in training and mission highest quality standards in materials and manufacturing processes are required. 160 years of experience, extensive know-how, expertise and modern production facilities allow us to consistently produce rounds of constant, outstanding quality. These products are used by most of the world's tier and SF and police groups. Quality without compromise is what SWISS P believe in.



**.223 Rem. SWISS P Target**

Bullet type, weight	HPBT 4,5 g / 69 gr
BC G1	0,379
Muzzle velocity	855 m/s*
Term of Reference	C.I.P.

Round for very best accuracy in training and competition



**.223 Rem. SWISS P AP**

Bullet type, weight	AP 4,1 g / 63 gr
BC G1	0,363
Muzzle velocity	875 m/s***
Term of Reference	Swiss Army

High-performance round for maximum penetration power on hard targets



**.223 Rem. SWISS P Styx Action**

Bullet type, weight	JHP 4,5 g / 69 gr
BC G1	0,313
Muzzle velocity	855 m/s*
Term of Reference	C.I.P.

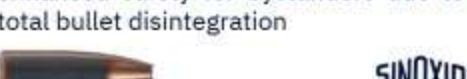
High performance round for excellent stopping power due to instantaneous energy deposition on soft targets



**.223 Rem. SWISS P Final SR**

Bullet type, weight	JHP 3,4 g / 52 gr
BC G1	0,182
Muzzle velocity	1040 m/s*
Term of Reference	C.I.P.

Highly accurate fragmentation bullet for a minimized risk of over-penetration and enhanced safety for bystanders due to total bullet disintegration



**.300 BLK SWISS P HV Ball SX**

Geschoss	TFMJ 9,5 g / 146 gr
BC G1	0,421
Geschwindigkeit	580 m/s**
Referenz	C.I.P.

Highly accurate full metal jacket round for military training and duty



**.300 BLK SWISS P HV LF Styx SX**

Geschoss	SHP 7,0 g / 108 gr
BC G1	0,247
Geschwindigkeit	745m/s**
Referenz	C.I.P.

Lead free round for excellent stopping power due to instantaneous energy deposition on soft targets



**.308 Win. SWISS P Tactical**

Bullet type, weight	SFNBT 10,6 g / 163 gr
BC G1	0,303
Muzzle velocity	820 m/s*
Term of Reference	C.I.P.

High performance round for excellent first-hit probability and terminal effect behind angled glass



**.308 Lapua Mag. SWISS P AP**

Bullet type, weight	AP 12,7 g / 196 gr
BC G1	0,652
Muzzle velocity	790m/s*
Term of Reference	C.I.P.

High-performance round for maximum penetration power on hard targets



**.338 Lapua Mag. SWISS P Target**

Bullet type, weight	HPBT 16,2 g / 250gr
BC G1	0,684
Muzzle velocity	865 m/s*
Term of Reference	C.I.P.

Round for very best accuracy in training and competition



**.308 Win. SWISS P Target**

Bullet type, weight	JHP 10,9 g / 168 gr
BC G1	0,489
Muzzle velocity	805 m/s*
Term of Reference	C.I.P.

Round for very best accuracy in training and competition



**.338 Lapua Mag. SWISS P Ball**

Bullet type, weight	FMJ 16,3 g / 251 gr
BC G1	0,657
Muzzle velocity	855 m/s*
Term of Reference	C.I.P.

Highly accurate full metal jacket round for military training and duty



**.338 Lapua Mag. Swiss P Target**

Bullet type, weight	HPBT 19,4 g / 300gr
BC G1	0,831
Muzzle velocity	835 m/s*
Term of Reference	C.I.P.

Round for very best accuracy in training and competition



**.308 Win. SWISS P Target**

Bullet type, weight	JHP 11,3 g / 175 gr
BC G1	0,547
Muzzle velocity	790 m/s*
Term of Reference	C.I.P.

Target round for an enhanced operation distance



**.338 Lapua Mag. SWISS P Ball**

Bullet type, weight	FMJ 16,3 g / 251 gr
BC G1	0,657
Muzzle velocity	855 m/s*
Term of Reference	C.I.P.

Highly accurate full metal jacket round for military training and duty



**.338 Lap. Mag. Styx Action**

Bullet type, weight	JHP 16 g / 247 gr
BC G1	0,433
Muzzle velocity	875 m/s*
Term of Reference	C.I.P.

High performance round for excellent stopping power due to instantaneous energy deposition on soft targets



**.308 Win. SWISS P Styx Action**

Bullet type, weight	HPBT 10,8 g / 167 gr
BC G1	0,363
Muzzle velocity	810 m/s*
Term of Reference	C.I.P.

High performance round for excellent stopping power due to instantaneous energy deposition on soft targets



**.338 Lap. Mag. SWISS P Tactical**

Bullet type, weight	SFNBT 16,2 g / 250 gr
BC G1	0,375
Muzzle velocity	860 m/s*
Term of Reference	C.I.P.

High performance round for excellent first-hit probability and terminal effect behind angled glass



**.338 Lapua Mag. Swiss P AP**

Bullet type, weight	AP 16,8 g / 260 gr
BC G1	0,677
Muzzle velocity	805 m/s*
Term of Reference	C.I.P.

High-performance round for maximum penetration power on hard targets







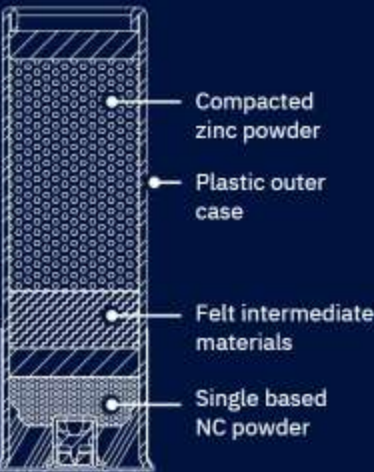
# 12/70 ROTTWEIL MAGNUM ENTRY I

32.5 g / 502 gr



The 12/70 Magnum ENTRY I is a special shell for special police units and military users. It is designed for the forcible opening of doors by means of a shot placed next to the strike plate and/or the hinges. The shell is fully compatible with pump-action and semi-automatic shotguns. It is designed for shotguns with Magnum proofing according to C.I.P.

Compacted zinc powder with a mass of 32.5 g is used as the active ingredient. This safely penetrates a St-37 type plate with a material thickness of 3mm when fired at a distance of approx. 2.5 cm from the target. The powder compact disintegrates completely upon impact with the sheet metal, which minimises collateral risk and the user's exposure to ricochets.



## 12/70 ENTRY I

Bullet	Compacted zinc powder 32.5 g / 502 gr	Term of Reference	C.I.P
Bullet material	Zinc	Temperature Range	-10°C to +52°C
Primer / Propellant powder	SINOXID* / Single based Nitrocellulose powder	Mean chamber pressure	max. 1050 bar (21°C)
Case material	Plastic / Culot Brass	Velocity v <sub>2.5</sub> / Energy	320 m/s (1050 fps) 1665 J / 700mm Barrel
Cartridge weight	approx. 45.0 g	Penetration at 2.5 cm	3mm DC01
Net. explosive weight	approx. 1.8 g	Packaging / Weight	25pcs. Folding Box / approx. 0.95 kg 300pcs. Wooden crate / approx. 19.5 kg

Item No.231 37 24





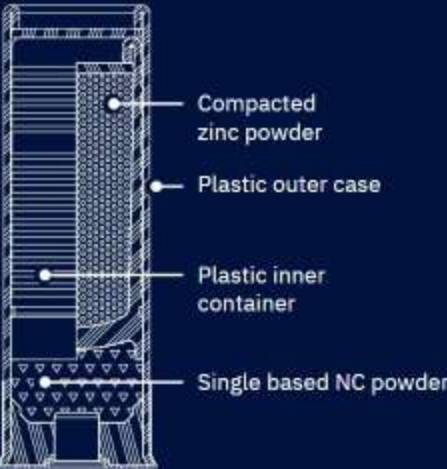
# 12/70 ROTTWEIL MAGNUM ENTRY II

28 g / 432 gr



The 12/70 Magnum ENTRY II is a particular shell used by special police units and military users to forcibly open doors. The shell is fully compatible with pump-action and semi-automatic shotguns.

It was developed in close collaboration with various special police units. They repeatedly expressed the requirement that doors should be opened reliably and precisely, even when firing from a distance of 10 m. The shell is therefore capable of safely penetrating a St37 sheet with a material thickness of 1.5 mm at a distance of 10 metres. This is achieved using a special 'plastic tube' containing 27 g of the zinc powder.



## 12/70 ENTRY II

Bullet	Compacted zinc powder in the inner container 28 g / 432 gr
Bullet material	Zinc / Plastic
Primer / Propellant powder	SINOXID® / Single based Nitrocellulose powder
Case material	Plastic / Culot Brass
Cartridge weight	approx. 45.0 g
Net. explosive weight	approx. 1.8 g

Item No.231 74 00

Term of Reference	C.I.P
Temperature Range	-10°C to +52°C
Mean chamber pressure	max. 1050 bar (21°C)
Velocity v <sub>2,5</sub> / Energy	380 m/s (1247 fps) 1949 J / 700mm Barrel
Accuracy at 10 m	H+B < 50 cm / Benelli M3
Penetration at 10 m	1,5 mm St37, 5 Cart. / Benelli M3
Packaging / Weight	25pcs. Folding Box / approx. 0.95 kg 200pcs. Cardboard box / approx. 8 kg



18.2mmx70 DM209 ZINC PELLE

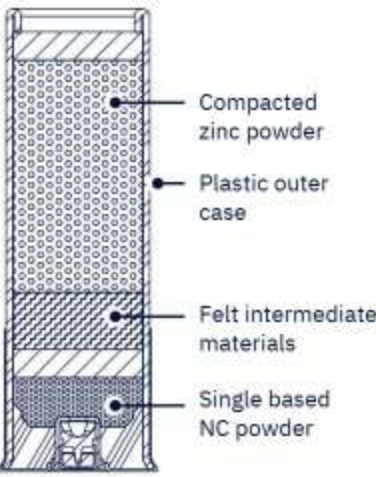
Bullet	Compacted zinc powder 32.5 g / 502 gr
Bullet material	Zinc
Primer / Propellant powder	SINOXID® / Single based Nitrocellulose powder
Case material	Plastic / Culot Brass
Cartridge weight	approx. 45.0 g
Net. explosive weight	approx. 1.8 g
Term of Reference	C.I.P
Temperature Range	-10°C to +52°C
Mean chamber pressure	max. 1050 bar (21°C)
Velocity v <sub>2.5</sub> / Energy	320 m/s (1050 fps) 1665 J / 710 mm Barrel
Penetration at 2.5 cm	3mm DC01
Packaging / Weight	25pcs. Folding Box / approx. 0.95 kg 300pcs. Wooden crate / approx. 19.5 kg

18.2mmx70 DM219 ZINC PELLE 12/70

Bullet	Compacted zinc powder in the inner container 28 g / 432 gr
Bullet material	Zinc / Plastic
Primer / Propellant powder	SINOXID® / Single based Nitrocellulose powder
Case material	Plastic / Culot Brass
Cartridge weight	approx. 45.0 g
Net. explosive weight	approx. 1.8 g
Term of Reference	C.I.P
Temperature Range	-10°C to +52°C
Mean chamber pressure	max. 1247 bar (21°C)
Velocity v <sub>2.5</sub> / Energy	380 m/s (1247 fps) 1949 J / 700mm Barrel
Accuracy at 10 m	H+B < 50 cm / Benelli M3
Penetration at 10 m	1.5 mm St37, 5 Cart. / Benelli M3
Packaging / Weight	25pcs. Folding Box / approx. 0.95 kg 300pcs. Cardboard box / approx. 19 kg

18.2mmx70 DM209 ZINC PELLE

32.5 g / 502 gr



The 18.2mmx70 DM209 Zinc Pellet ENTRY I is a special shell for the German Armed Forces. It is fully qualified and is now widely used by the troops. It is designed for the forcible opening of doors by means of a shot placed next to the strike plate and/or the hinges. The shell is fully compatible with pump-action and semi-automatic shotguns. It is designed for shotguns with Magnum proofing according to C.I.P.

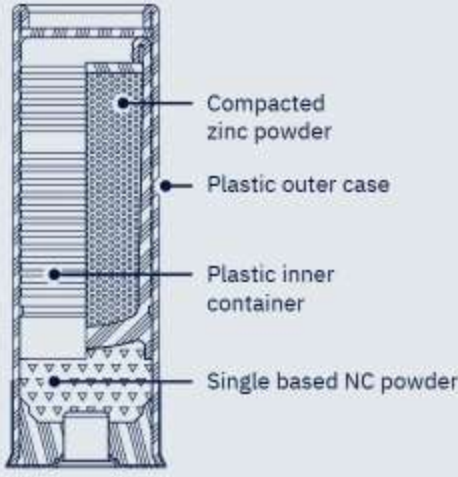
Compacted zinc powder with a mass of 32.5 g is used as the active ingredient. This safely penetrates a St-37 type plate with a material thickness of 3mm when fired at a distance of approx. 2.5 cm from the target. The powder compact disintegrates completely upon impact with the sheet metal, which minimises collateral risk and the user's exposure to ricochets.



Item No. 231 51 84

18.2mmx70 DM219 ZINC PELLE

28 g / 432 gr



DM219 is the designated ENTRY II shotgun shell for the German Armed Forces. It is fully qualified and has now been in use for years. In addition to the DM209, the 12/70 Magnum DM219 is a special shell used forcibly open doors. The shell is fully compatible with pump-action and semi-automatic shotguns.

The German Armed Forces repeatedly expressed the requirement that doors should be opened reliably and precisely, even when firing from a distance of 10 m. The shell is therefore capable of safely penetrating a St37 sheet with a material thickness of 1.5 mm at a distance of 10 metres. This is achieved using a special 'plastic tube' containing 27 g of the zinc powder. The inner container disintegrates into its constituent parts, which significantly reduces the risk of collateral damage. The zinc powder atomises on impact with the hard target.



Item No. 231 64 38





# Our product feature icons



**SINTOX NON-TOXIC PRIMER**  
Low-pollutant and heavy metal-free



**SINTOX NON-TOXIC PRIMER**  
Low-pollutant and heavy metal-free.  
X-ray detectable



**SINOXID PRIMER**  
Corrosion-free



**LEADFREE \***  
100% free of heavy metals



**CONFORMITY ACCORDING TO C.I.P.**



**CERTIFICATION ACCORDING TO TECHNICAL TERMS OF DELIVERY**



**HIGH PRECISION**



**SUITABLE FOR FULL AUTOMATIC**



**ARMOUR PIERCING**



**NIGHT VISION**  
Visible with  
Infrared night vision devices



**EXTERNAL DIMENSIONS:**  
Ammunition is manufactured to a design, which meets a NATO Standardisation Agreement.



**WATERPROOF**



**TEMPERATURE RANGE**  
Functionality and usability of the cartridge at tested surrounding temperatures



**SHOCKPROOF**



**MAXIMUM SHELF LIVE**



**LINKED AVAILABLE**



**CLIPPED AVAILABLE**

## Ballistic Data



9x19



9x19 LF FMJ SX / 6.0 g / 93 gr				
Distance (m)	Velocity (m/s)	Energy (J)	Time of flight (ms)	BC G1*
0	390	456	0	-
25	367	404	66	0,159
50	347	361	136	0,154
100	318	303	287	0,163
150	296	263	450	0,154
200	279	234	624	0,155
250	265	211	808	0,159
300	253	192	1002	0,166
350	241	174	1205	0,146
400	231	160	1417	0,163
450	221	147	1639	0,158
500	212	135	1871	0,158
550	203	124	2112	0,155
600	195	114	2365	0,159

9x19 LF FMJ SXF / 6.0 g / 93 gr				
Distance (m)	Velocity (m/s)	Energy (J)	Time of flight (ms)	BC G1*
0	419	527	0	-
25	392	461	62	0,156
50	369	408	127	0,159
100	333	333	271	0,161
150	307	283	427	0,155
200	288	249	596	0,156
250	272	222	775	0,153
300	259	201	963	0,16
350	247	183	1161	0,158
400	236	167	1368	0,156
450	226	153	1585	0,158
500	217	141	1811	0,163
550	208	130	2047	0,16
600	199	119	2294	0,147

9x19 ACTION 4 SXF / 6.1 g / 94 gr				
Distance (m)	Velocity (m/s)	Energy (J)	Time of flight (ms)	BC G1*
0	420	538	0	-
25	395	476	61	0,168
50	372	422	127	0,164
100	337	346	268	0,172
150	315	303	422	0,199
200	300	275	585	0,228
250	286	249	755	0,202
300	268	219	936	0,131
350	249	189	1130	0,102
400	231	163	1338	0,094
450	215	141	1563	0,095
500	200	122	1805	0,092
550	186	106	2065	0,09
600	173	91	2346	0,09



9x19 ACTION 5 SXF / 6.1 g / 94 gr				
Distance (m)	Velocity (m/s)	Energy (J)	Time of flight (ms)	BC G1*
0	420	538	0	-
25	395	476	61	0,168
50	372	422	127	0,164
100	337	346	268	0,172
150	315	303	422	0,199
200	300	275	585	0,228
250	286	249	755	0,202
300	268	219	936	0,131
350	249	189	1130	0,102
400	231	163	1338	0,094
450	215	141	1563	0,095
500	200	122	1805	0,092
550	186	106	2065	0,09
600	173	91	2346	0,09

9x19 ACTION 6 SXF / 6.1 g / 94 gr				
Distance (m)	Velocity (m/s)	Energy (J)	Time of flight (ms)	BC G1*
0	373	424	0	-
25	355	384	69	0,183
50	340	353	141	0,19
100	317	306	293	0,198
150	302	278	455	0,23
200	290	257	624	0,246
250	274	229	801	0,153
300	256	200	990	0,116
350	238	173	1193	0,099
400	221	149	1411	0,094
450	206	129	1646	0,093
500	192	112	1898	0,093
550	179	98	2168	0,095
600	167	85	2458	0,094

9x19 ACTION SE SXF / 7.0 g / 108 gr				
Distance (m)	Velocity (m/s)	Energy (J)	Time of flight (ms)	BC G1*
0	390	532	0	-
25	368	474	66	0,167
50	350	429	136	0,176
100	322	363	285	0,176
150	306	328	445	0,23
200	295	305	612	0,283
250	283	280	785	0,226
300	268	251	966	0,155
350	253	224	1158	0,134
400	238	198	1362	0,116
450	224	176	1579	0,113
500	211	156	1809	0,114
550	198	137	2055	0,103
600	186	121	2317	0,106



9x19 LF FMJ SX / 6.0 g / 93 gr				
Distance (m)	Velocity (m/s)	Energy (J)	Time of flight (ms)	BC G1*
0	430	555	0	-
25	402	485	60	0,155
50	377	426	124	0,155
100	339	345	265	0,164
150	311	290	419	0,153
200	291	254	585	0,155
250	275	227	762	0,158
300	262	206	949	0,164
350	249	186	1145	0,146
400	238	170	1350	0,158
450	228	156	1565	0,165
500	219	144	1789	0,165
550	210	132	2024	0,156
600	201	121	2268	0,154

9x19 LF FMJ SXF / 6.0 g / 93 gr				
Distance (m)	Velocity (m/s)	Energy (J)	Time of flight (ms)	BC G1*
0	469	660	0	-
25	438	576	55	0,158
50	409	502	114	0,153
100	361	391	245	0,157
150	327	321	390	0,158
200	303	275	549	0,158
250	285	244	720	0,158
300	270	219	900	0,155
350	257	198	1090	0,161
400	245	180	1290	0,151
450	235	166	1498	0,168
500	225	152	1717	0,162
550	215	139	1945	0,147
600	206	127	2183	0,153

9x19 ACTION 4 SXF / 6.1 g / 94 gr				
Distance (m)	Velocity (m/s)	Energy (J)	Time of flight (ms)	BC G1*
0	445	604	0	-
25	418	533	58	0,171
50	393	471	120	0,167
100	351	376	255	0,165
150	324	320	403	0,186
200	307	287	562	0,226
250	293	262	729	0,22
300	277	234	905	0,159
350	257	201	1092	0,107
400	239	174	1294	0,1
450	222	150	1511	0,093
500	207	131	1745	0,096
550	192	112	1997	0,086
600	179	98	2268	0,095



9x19 ACTION 5 SXF / 6.1 g / 94 gr				
Distance (m)	Velocity (m/s)	Energy (J)	Time of flight (ms)	BC G1*
0	469	671	0	-
25	440	590	55	0,168
50	413	520	114	0,166
100	367	411	242	0,169
150	333	338	386	0,169
200	313	299	541	0,209
250	299	273	705	0,238
300	284	246	876	0,185
350	265	214	1058	0,121
400	247	186	1254	0,107
450	229	160	1465	0,093
500	213	138	1692	0,092
550	198	120	1936	0,091
600	184	103	2199	0,089

9x19 ACTION 6 SXF / 6.1 g / 94 gr				
Distance (m)	Velocity (m/s)	Energy (J)	Time of flight (ms)	BC G1*
0	415	525	0	-
25	391	466	62	0,172
50	370	418	128	0,175
100	338	348	270	0,187
150	316	305	423	0,201
200	301	276	586	0,231
250	289	255	755	0,244
300	273	227	933	0,152
350	254	197	1123	0,109
400	236	170	1327	0,098
450	220	148	1547	0,096
500	205	128	1783	0,095
550	191	111	2036	0,093
600	178	97	2308	0,092

9x19 ACTION SE SXF / 7.0 g / 108 gr				
Distance (m)	Velocity (m/s)	Energy (J)	Time of flight (ms)	BC G1*
0	438	671	0	-
25	411	591	59	0,165
50	386	521	122	0,162
100	347	421	259	0,171
150	320	358	409	0,177
200	305	326	570	0,244
250	294	303	737	0,279
300	282	278	910	0,224
350	267	250	1092	0,15
400	252	222	1285	0,133
450	237	197	1490	0,117
500	223	174	1708	0,113
550	210	154	1940	0,11
600	197	136	2187	0,105





9x19



9x19 GREEN RANGE S SXF / 6.1 g / 94 gr

Distance (m)	Velocity (m/s)	Energy (J)	Time of flight (ms)	BC G1*
0	414	523	0	-
25	398	483	25	0,104
50	384	450	50	0,112
100	358	391	104	0,107
150	337	346	162	0,108
200	321	314	223	0,115
250	310	293	286	0,124
300	301	276	352	0,166
350	295	265	419	0,197
400	288	253	487	0,158
450	281	241	557	0,128
500	272	226	630	0,105
550	262	209	705	0,084
600	251	192	783	0,07

9x19 GREEN RANGE SXF / 6.1 g / 94 gr

Distance (m)	Velocity (m/s)	Energy (J)	Time of flight (ms)	BC G1*
0	414	523	0	-
25	398	483	25	0,104
50	384	450	50	0,112
100	358	391	104	0,107
150	337	346	162	0,108
200	321	314	223	0,115
250	309	291	286	0,124
300	301	276	352	0,166
350	295	265	419	0,197
400	288	253	488	0,158
450	280	239	558	0,128
500	271	224	631	0,105
550	261	208	706	0,084
600	250	191	784	0,07



9x19 GREEN RANGE S SXF / 6.1 g / 94 gr

Distance (m)	Velocity (m/s)	Energy (J)	Time of flight (ms)	BC G1*
0	462	651	0	-
25	444	601	22	0,108
50	427	556	45	0,109
100	395	476	94	0,107
150	368	413	146	0,11
200	345	363	203	0,107
250	327	326	262	0,11
300	314	301	325	0,127
350	304	282	390	0,138
400	297	269	456	0,177
450	291	258	524	0,188
500	284	246	594	0,151
550	275	231	665	0,109
600	266	216	739	0,096

9x19 GREEN RANGE SXF / 6.1 g / 94 gr

Distance (m)	Velocity (m/s)	Energy (J)	Time of flight (ms)	BC G1*
0	448	612	0	-
25	430	564	23	0,104
50	414	523	46	0,112
100	383	447	97	0,104
150	358	391	151	0,11
200	337	346	208	0,108
250	321	314	269	0,115
300	309	291	333	0,124
350	301	276	399	0,166
400	295	265	466	0,197
450	288	253	535	0,158
500	280	239	605	0,128
550	271	224	678	0,105
600	261	208	753	0,084

9x19 NATO BALL / 8.0 g / 124 gr

Distance (m)	Velocity (m/s)	Energy (J)	Time of flight (ms)	BC G1*
0	350	490	0	-
25	330	436	74	0,129
50	315	397	151	0,14
100	297	353	315	0,186
150	283	320	487	0,194
200	264	279	670	0,12
250	240	230	868	0,077
300	216	187	1088	0,065
350	194	151	1333	0,062
400	173	120	1606	0,057
450	155	96	1912	0,06
500	139	77	2254	0,063
550	124	62	2638	0,059
600	111	49	3068	0,064

9x19 NATO BALL / 8.0 g / 124 gr

Distance (m)	Velocity (m/s)	Energy (J)	Time of flight (ms)	BC G1*
0	385	593	0	-
25	358	513	67	0,128
50	336	452	140	0,128
100	308	379	296	0,147
150	293	343	463	0,208
200	277	307	638	0,159
250	257	264	825	0,107
300	232	215	1030	0,07
350	208	173	1258	0,061
400	187	140	1512	0,062
450	167	112	1796	0,058
500	150	90	2113	0,063
550	134	72	2468	0,06
600	120	58	2867	0,063



9x19 NATO BALL SX / 8.0 g / 124 gr

Distance (m)	Velocity (m/s)	Energy (J)	Time of flight (ms)	BC G1*
0	350	490	0	-
25	330	436	74	0,129
50	315	397	151	0,14
100	297	353	315	0,186
150	283	320	487	0,194
200	264	279	670	0,12
250	240	230	868	0,077
300	216	187	1088	0,065
350	194	151	1333	0,062
400	173	120	1606	0,057
450	155	96	1912	0,06
500	139	77	2254	0,063
550	124	62	2638	0,059
600	111	49	3068	0,064

9x19 NATO BALL SX / 8.0 g / 124 gr

Distance (m)	Velocity (m/s)	Energy (J)	Time of flight (ms)	BC G1*
0	385	593	0	-
25	358	513	67	0,128
50	336	452	140	0,128
100	308	379	296	0,147
150	293	343	463	0,208
200	277	307	638	0,159
250	257	264	825	0,107
300	232	215	1030	0,07
350	208	173	1258	0,061
400	187	140	1512	0,062
450	167	112	1796	0,058
500	150	90	2113	0,063
550	134	72	2468	0,06
600	120	58	2867	0,063



9mmx19 DM41 WK / 8.0 g / 124 gr

Distance (m)	Velocity (m/s)	Energy (J)	Time of flight (ms)	BC G1*
0	353	498	0	-
25	333	444	73	0,134
50	318	404	150	0,146
100	299	358	312	0,18
150	285	325	484	0,203
200	268	287	664	0,137
250	246	242	859	0,088
300	222	197	1073	0,067
350	201	162	1310	0,067
400	181	131	1573	0,062
450	163	106	1866	0,063
500	147	86	2191	0,065
550	132	70	2553	0,064
600	119	57	2957	0,066

9mmx19 DM41 WK / 8.0 g / 124 gr

Distance (m)	Velocity (m/s)	Energy (J)	Time of flight (ms)	BC G1*
0	371	551	0	-
25	348	484	70	0,137
50	329	433	144	0,135
100	305	372	302	0,161
150	291	339	470	0,214
200	275	303	647	0,158
250	255	260	836	0,104
300	231	213	1042	0,072
350	209	175	1270	0,067
400	188	141	1523	0,062
450	169	114	1804	0,062
500	152	92	2117	0,063
550	137	75	2465	0,065
600	124	62	2853	0,068

9mmx19 DM51A1 WK / 8.0 g / 124 gr

Distance (m)	Velocity (m/s)	Energy (J)	Time of flight (ms)	BC G1*
0	365	533	0	-
25	344	473	71	0,144
50	329	433	145	0,168
100	307	377	303	0,179
150	293	343	469	0,22
200	279	311	644	0,185
250	262	275	829	0,129
300	241	232	1028	0,088
350	221	195	1245	0,08
400	203	165	1482	0,078
450	186	138	1740	0,075
500	170	116	2022	0,072
550	156	97	2329	0,077
600	143	82	2666	0,078

9mmx19 DM51A1 WK / 8.0 g / 124 gr

Distance (m)	Velocity (m/s)	Energy (J)	Time of flight (ms)	BC G1*
0	404	653	0	-
25	377	569	64	0,143
50	354	501	133	0,146
100	322	415	281	0,158
150	303	367	441	0,193
200	290	336	610	0,226
250	275	303	787	0,167
300	256	262	975	0,109
350	236	223	1178	0,089
400	216	187	1400	0,076
450	199	158	1642	0,08
500	182	132	1905	0,075
550	167	112	2193	0,075
600	153	94	2508	0,076





# 4.6x30



## 4.6x30 TRAINING SX / 1.7 g / 26 gr

Distance (m)	Velocity (m/s)	Energy (J)	Time of flight (ms)	BC G1*
0	661	350	0	-
25	613	301	39	0,132
50	567	257	82	0,131
100	484	187	177	0,134
150	415	138	289	0,139
200	361	104	418	0,141
250	321	82	566	0,13
300	295	70	729	0,131
350	275	61	904	0,13
400	259	54	1092	0,131
450	244	48	1291	0,124
500	231	43	1502	0,127
550	218	38	1726	0,119
600	207	34	1961	0,129

## 4.6x30 FMJ SX / 2.6 g / 40 gr

Distance (m)	Velocity (m/s)	Energy (J)	Time of flight (ms)	BC G1*
0	622	503	0	-
25	599	466	41	0,27
50	577	433	83	0,275
100	534	371	174	0,269
150	493	316	271	0,268
200	454	268	377	0,261
250	417	226	491	0,251
300	383	191	617	0,238
350	352	161	753	0,217
400	328	140	901	0,219
450	313	127	1057	0,267
500	303	119	1220	0,352
550	293	112	1388	0,3
600	284	105	1561	0,292

## 4.6x30 ACTION SX / 2.0 g / 31 gr

Distance (m)	Velocity (m/s)	Energy (J)	Time of flight (ms)	BC G1*
0	688	473	0	-
25	641	411	38	0,138
50	597	356	78	0,141
100	519	269	168	0,149
150	451	203	271	0,153
200	387	150	391	0,136
250	333	111	531	0,115
300	308	95	688	0,162
350	291	85	855	0,179
400	276	76	1031	0,169
450	263	69	1217	0,166
500	251	63	1412	0,163
550	239	57	1616	0,148
600	228	52	1831	0,147

## 4.6x30 SUBSONIC SX / 5.0 g / 77 gr

Distance (m)	Velocity (m/s)	Energy (J)	Time of flight (ms)	BC G1*
0	296	219	0	-
25	291	212	85	0,274
50	286	203	172	0,23
100	274	188	351	0,214
150	261	170	538	0,167
200	249	155	734	0,156
250	236	139	940	0,135
300	223	124	1158	0,12
350	211	111	1388	0,122
400	200	100	1632	0,124
450	189	89	1890	0,117
500	179	80	2163	0,12
550	170	72	2450	0,126
600	162	66	2754	0,139

## 4,6x30 AP SX / 2.0 g / 31 gr

Distance (m)	Velocity (m/s)	Energy (J)	Time of flight (ms)	BC G1*
0	680	462	0	-
25	643	413	38	0,175
50	607	368	78	0,174
100	539	291	165	0,174
150	476	227	264	0,172
200	418	175	376	0,165
250	365	133	504	0,146
300	329	108	649	0,155
350	311	97	806	0,225
400	297	88	971	0,232
450	285	81	1143	0,232
500	274	75	1322	0,214
550	264	70	1508	0,222
600	254	65	1702	0,196

## 4.6x30 SEMI FRANGIBLE SX / 1.7 g / 26 gr

Distance (m)	Velocity (m/s)	Energy (J)	Time of flight (ms)	BC G1*
0	640	348	0	-
25	587	293	41	0,117
50	539	247	85	0,123
100	453	174	187	0,123
150	380	123	307	0,118
200	329	92	450	0,117
250	297	75	610	0,114
300	275	64	785	0,118
350	256	56	974	0,109
400	240	49	1176	0,113
450	226	43	1391	0,115
500	213	39	1620	0,112
550	201	34	1862	0,115
600	190	31	2119	0,117

## 4.6mmx30 DM41 DEA / 2.0 g / 31 gr

Distance (m)	Velocity (m/s)	Energy (J)	Time of flight (ms)	BC G1*
0	688	473	0	-
25	641	411	38	0,138
50	597	356	78	0,141
100	519	269	168	0,149
150	451	203	271	0,153
200	387	150	391	0,136
250	333	111	531	0,115
300	308	95	688	0,162
350	291	85	855	0,179
400	276	76	1031	0,169
450	263	69	1217	0,166
500	251	63	1412	0,163
550	239	57	1616	0,148
600	228	52	1831	0,147

## 4.6mmx30 DM21 / 2.6 g / 40 gr

Distance (m)	Velocity (m/s)	Energy (J)	Time of flight (ms)	BC G1*
0	622	503	0	-
25	599	466	41	0,27
50	577	433	83	0,275
100	534	371	174	0,269
150	493	316	271	0,268
200	454	268	377	0,261
250	417	226	491	0,251
300	383	191	617	0,238
350	352	161	753	0,217
400	328	140	901	0,219
450	313	127	1057	0,267
500	303	119	1220	0,352
550	293	112	1388	0,3
600	284	105	1561	0,292

## 4.6mmx30 DM31 / 2.0 g / 31 gr

Distance (m)	Velocity (m/s)	Energy (J)	Time of flight (ms)	BC G1*
0	680	462	0	-
25	643	413	38	0,175
50	607	368	78	0,174
100	539	291	165	0,174
150	476	227	264	0,172
200	418	175	376	0,165
250	365	133	504	0,146
300	329	108	649	0,155
350	311	97	806	0,225
400	297	88	971	0,232
450	285	81	1143	0,232
500	274	75	1322	0,214
550	264	70	1508	0,222
600	254	65	1702	0,196





5.56x45



5.56x45 FMJ (M193) / 3.56 g / 55 gr

Distance (m)	Velocity (m/s)	Energy (J)	Time of flight (ms)	BC G1*
0	925	1.519	0	-
25	899	1.435	27	0,302
100	822	1.199	115	0,293
200	721	923	245	0,279
300	625	693	393	0,272
400	535	508	566	0,266
500	454	366	769	0,261
600	381	258	1010	0,238
700	324	186	1296	0,202
800	301	162	1618	0,318
900	283	142	1961	0,31
1000	267	127	2326	0,285
1100	253	114	2712	0,29
1200	239	101	3120	0,253

5.56x45 NATO BALL (SS109) / 4.0 g / 62 gr

Distance (m)	Velocity (m/s)	Energy (J)	Time of flight (ms)	BC G1*
0	925	1.711	0	-
25	898	1.613	27	0,292
100	818	1.338	115	0,281
200	719	1.034	245	0,284
300	626	784	395	0,281
400	538	579	567	0,273
500	451	407	770	0,242
600	379	287	1012	0,238
700	329	216	1297	0,237
800	298	178	1617	0,236
900	275	151	1967	0,229
1000	257	132	2343	0,234
1100	-	-	-	-
1200	-	-	-	-

5.56x45 TRAINING HV / 4.0 g / 62 gr

Distance (m)	Velocity (m/s)	Energy (J)	Time of flight (ms)	BC G1**
0	710	1.008	0	-
25	668	892	36	0,157
100	553	612	160	0,161
200	435	378	365	0,178
300	350	245	622	0,18
400	299	179	934	0,164
500	268	144	1289	0,164
600	244	119	1681	0,16
700	224	100	2110	0,161
800	206	85	2577	0,159
900	191	73	3084	0,175
1000	177	63	3633	0,172
1100	164	54	4229	0,176
1200	-	-	-	-



5.56x45 LF STYX ACTION / 3.7 g / 57 gr

Distance (m)	Velocity (m/s)	Energy (J)	Time of flight (ms)	BC G1*
0	880	1.433	0	-
25	838	1.299	29	0,179
100	718	954	126	0,177
200	576	614	281	0,179
300	464	398	476	0,197
400	379	266	715	0,206
500	310	178	1007	0,152
600	249	115	1367	0,079
700	200	74	1816	0,062
800	161	48	2375	0,061
900	-	-	-	-
1000	-	-	-	-
1100	-	-	-	-
1200	-	-	-	-

5.56mmx45 DM11A1 / 4.0 g / 62 gr

Distance (m)	Velocity (m/s)	Energy (J)	Time of flight (ms)	BC G1*
0	920	1.693	0	-
25	895	1.602	28	0,312
100	820	1.345	115	0,3
200	726	1.054	245	0,299
300	638	814	392	0,3
400	557	620	559	0,3
500	481	462	753	0,291
600	415	344	977	0,289
700	370	274	1234	0,347
800	338	228	1517	0,374
900	314	197	1825	0,367
1000	291	169	2156	0,275
1100	266	142	2515	0,191
1200	240	115	2911	0,145

5.56x45 NATO TRACER / 4.1 g / 63 gr

Distance (m)	Velocity (m/s)	Energy (J)	Time of flight (ms)	BC G7**
0	919	1.689	0	-
25	896	1.606	28	0,177
100	827	1.368	115	0,175
200	740	1.095	243	0,177
300	658	866	386	0,176
400	582	677	548	0,179
500	511	522	731	0,181
600	446	398	941	0,187
700	395	312	1180	0,222
800	360	259	1446	0,298
900	333	222	1735	0,263
1000	311	193	2046	0,153
1100	291	169	2379	0,154
1200	269	145	2736	0,107

5.56x45 NATO IR TRACER / 4.1 g / 63 gr

Distance (m)	Velocity (m/s)	Energy (J)	Time of flight (ms)	BC G7**
0	919	1.689	0	-
25	896	1.606	28	0,177
100	827	1.368	115	0,175
200	740	1.095	243	0,177
300	658	866	386	0,176
400	582	677	548	0,179
500	511	522	731	0,181
600	446	398	941	0,187
700	395	312	1180	0,222
800	360	259	1446	0,298
900	333	222	1735	0,263
1000	311	193	2046	0,153
1100	291	169	2379	0,134
1200	269	145	2736	0,107

5.56mmx45 DM41A1 / 4.0 g / 62 gr

Distance (m)	Velocity (m/s)	Energy (J)	Time of flight (ms)	BC G1*
0	899	1.435	0	-
25	876	1.362	28	0,336
100	808	1.159	117	0,326
200	719	918	248	0,315
300	635	716	396	0,313
400	555	547	565	0,303
500	481	411	759	0,299
600	413	303	983	0,279
700	351	219	1246	0,236
800	314	175	1550	0,255
900	295	154	1879	0,34
1000	280	139	2228	0,354
1100	266	126	2596	0,321
1200	253	114	2983	0,31

5.56mmx45 DM21A1 / 4.1 g / 63 gr

Distance (m)	Velocity (m/s)	Energy (J)	Time of flight (ms)	BC G1*
0	935	1.748	0	-
25	912	1.663	27	0,345
100	843	1.421	113	0,331
200	754	1.137	238	0,323
300	671	900	379	0,325
400	594	706	537	0,327
500	523	547	716	0,328
600	457	418	921	0,319
700	402	323	1155	0,329
800	365	266	1417	0,405
900	337	227	1703	0,416
1000	315	198	2010	0,398
1100	295	174	2339	0,327
1200	273	149	2691	0,231





7.62x51



7.62x51 NATO TRACER (M62)/9.1 g/140 gr

Distance (m)	Velocity (m/s)	Energy (J)	Time of flight (ms)	BC G1*
0	846	3.257	0	-
25	829	3.127	30	0,434
100	779	2.761	123	0,433
200	714	2.320	257	0,426
300	650	1.922	404	0,411
400	588	1.573	566	0,402
500	528	1.268	746	0,388
600	469	1.001	946	0,361
700	412	772	1174	0,329
800	358	583	1434	0,277
900	319	463	1732	0,259
1000	294	393	2059	0,268
1100	274	342	2412	0,252
1200	257	301	2790	0,25

7.62mmx51 DM21A3 / 9.1 g / 140 gr

Distance (m)	Velocity (m/s)	Energy (J)	Time of flight (ms)	BC G1*
0	845	3.249	0	-
25	828	3.119	30	0,433
100	777	2.747	123	0,425
200	710	2.294	258	0,412
300	647	1.905	406	0,416
400	586	1.562	568	0,407
500	528	1.268	748	0,402
600	473	1.018	948	0,388
700	422	810	1172	0,376
800	374	636	1424	0,336
900	335	511	1708	0,308
1000	309	434	2019	0,315
1100	288	377	2355	0,287
1200	270	332	2714	0,267

7.62x51 NATO IR TRACER / 9.1 g / 140 gr

Distance (m)	Velocity (m/s)	Energy (J)	Time of flight (ms)	BC G1*
0	846	3.257	0	-
25	829	3.127	30	0,434
100	779	2.761	123	0,433
200	714	2.320	257	0,426
300	650	1.922	404	0,411
400	588	1.573	566	0,402
500	528	1.268	746	0,388
600	469	1.001	946	0,361
700	412	772	1174	0,329
800	358	583	1434	0,277
900	319	463	1732	0,259
1000	294	393	2059	0,268
1100	274	342	2412	0,252
1200	257	301	2790	0,25

7.62mmx51 DM111A2 / 9.55 g / 147 gr

Distance (m)	Velocity (m/s)	Energy (J)	Time of flight (ms)	BC G1*	BC G7**
0	825	3.233	0	-	-
25	807	3.093	31	0,405	0,215
100	754	2.700	127	0,401	0,216
200	686	2.235	266	0,399	0,215
300	621	1.832	419	0,396	0,213
400	559	1.484	589	0,389	0,213
500	501	1.192	778	0,388	0,217
600	444	936	990	0,356	0,211
700	389	719	1230	0,316	0,205
800	342	556	1505	0,28	0,202
900	310	456	1814	0,272	0,107
1000	288	393	2149	0,274	0,120
1100	270	346	2508	0,267	0,131
1200	254	306	2891	0,256	0,136

7.62x51 NATO BALL (M80) / 9.45 g / 146 gr

Distance (m)	Velocity (m/s)	Energy (J)	Time of flight (ms)	BC G1*	BC G7**
0	825	3.233	0	-	-
25	807	3.093	31	0,405	0,215
100	754	2.700	127	0,401	0,216
200	686	2.235	266	0,399	0,215
300	621	1.832	419	0,396	0,213
400	559	1.484	589	0,389	0,213
500	501	1.192	778	0,388	0,217
600	444	936	990	0,356	0,211
700	389	719	1230	0,316	0,205
800	342	556	1505	0,28	0,202
900	310	456	1814	0,272	0,107
1000	288	393	2149	0,274	0,120
1100	270	346	2508	0,267	0,131
1200	254	306	2891	0,256	0,136





12.7x99



12.7x99 LF TRACER SX / 40.5 g / 625 gr

Distance (m)	Velocity (m/s)	Energy (J)	Time of flight (ms)	BC G1*
0	888	15.968	0	-
25	877	15.575	28	0,697
100	843	14.384	116	0,661
200	800	12.947	237	0,68
300	758	11.618	366	0,674
400	718	10.419	501	0,688
500	679	9.313	644	0,683
600	641	8.296	796	0,684
700	605	7.386	957	0,689
800	569	6.529	1127	0,67
900	534	5.746	1309	0,66
1000	500	5.034	1502	0,651
1100	467	4.388	1710	0,632
1200	435	3.804	1932	0,604

12.7x99 LF IR-TRACER SX / 40.5 g / 625 gr

Distance (m)	Velocity (m/s)	Energy (J)	Time of flight (ms)	BC G1*
0	888	15968	0	-
25	877	15.575	28	0,697
100	843	14.384	116	0,661
200	800	12.947	237	0,68
300	758	11.618	366	0,674
400	718	10.419	501	0,688
500	679	9.313	644	0,683
600	641	8.296	796	0,684
700	605	7.386	957	0,689
800	569	6.529	1127	0,67
900	534	5.746	1309	0,66
1000	500	5.034	1502	0,651
1100	467	4.388	1710	0,632
1200	435	3.804	1932	0,604

12.7x99 LF BALL SX / 42.5 g / 656 gr

Distance (m)	Velocity (m/s)	Energy (J)	Time of flight (ms)	BC G1*
0	900	17.213	0	-
25	889	16.794	28	0,704
100	856	15.571	114	0,692
200	813	14.046	234	0,687
300	771	12.632	360	0,68
400	730	11.324	493	0,679
500	691	10.146	634	0,69
600	653	9.061	783	0,685
700	616	8.063	941	0,68
800	580	7.149	1108	0,678
900	545	6.312	1286	0,675
1000	512	5.571	1475	0,675
1100	479	4.876	1677	0,646
1200	447	4.246	1894	0,622

12.7x99 SR SOLID SX / 45.2 g / 698 gr

Distance (m)	Velocity (m/s)	Energy (J)	Time of flight (ms)	BC G1*
0	881	17.541	0	-
25	859	16.676	29	0,345
100	793	14.212	120	0,333
200	711	11.425	253	0,339
300	635	9.113	402	0,344
400	563	7.163	569	0,339
500	496	5.560	758	0,334
600	432	4.218	974	0,311
700	375	3.178	1223	0,288
800	330	2.461	1509	0,259
900	300	2.034	1827	0,251
1000	274	1.697	2176	0,2
1100	253	1.447	2557	0,198
1200	234	1.237	2970	0,181

12.7mmx99 DM91A1 / 42.5 g / 656 gr

Distance (m)	Velocity (m/s)	Energy (J)	Time of flight (ms)	BC G1*
0	900	17.213	0	-
25	889	16.794	28	0,704
100	856	15.571	114	0,692
200	813	14.046	234	0,687
300	771	12.632	360	0,68
400	730	11.324	493	0,679
500	691	10.146	634	0,69
600	653	9.061	783	0,685
700	616	8.063	941	0,68
800	580	7.149	1108	0,678
900	545	6.312	1286	0,675
1000	512	5.571	1475	0,675
1100	479	4.876	1677	0,646
1200	447	4.246	1894	0,622

12.7x99 SR SOLID TRACER SX / 45.8 g / 707 gr

Distance (m)	Velocity (m/s)	Energy (J)	Time of flight (ms)	BC G1*
0	871	17.373	0	-
25	849	16.506	29	0,343
100	786	14.141	121	0,347
200	706	11.404	255	0,346
300	631	9.106	405	0,347
400	562	7.219	573	0,352
500	496	5.620	762	0,34
600	434	4.299	978	0,321
700	377	3.242	1226	0,291
800	333	2.527	1509	0,273
900	302	2.076	1825	0,25
1000	277	1.744	2171	0,216
1100	255	1.477	2549	0,192
1200	236	1.263	2958	0,187

12.7x99 SR SOLID IR-TRACER SX/45.8 g/707 gr

Distance (m)	Velocity (m/s)	Energy (J)	Time of flight (ms)	BC G1*
0	871	17.373	0	-
25	849	16.506	29	0,343
100	786	14.141	121	0,347
200	706	11.404	255	0,346
300	631	9.106	405	0,347
400	562	7.219	573	0,352
500	496	5.620	762	0,34
600	434	4.299	978	0,321
700	377	3.242	1226	0,291
800	333	2.527	1509	0,273
900	302	2.076	1825	0,25
1000	277	1.744	2171	0,216
1100	255	1.477	2549	0,192
1200	236	1.263	2958	0,187

12.7x99 HC SX / 47.5 g / 733 gr

Distance (m)	Velocity (m/s)	Energy (J)	Time of flight (ms)	BC G1*
0	900	19.238	0	-
25	887	18.686	28	0,603
100	851	17.200	114	0,627
200	805	15.391	235	0,643
300	762	13.790	363	0,662
400	722	12.380	498	0,685
500	683	11.079	640	0,686
600	645	9.881	791	0,686
700	608	8.780	951	0,675
800	573	7.798	1120	0,69
900	539	6.900	1300	0,688
1000	505	6.057	1492	0,65
1100	473	5.314	1696	0,656
1200	442	4.640	1915	0,638

12.7mmx99 DM101A1 / 40.5 g / 625 gr

Distance (m)	Velocity (m/s)	Energy (J)	Time of flight (ms)	BC G1*
0	888	15.968	0	-
25	877	15.575	28	0,697
100	843	14.384	116	0,661
200	800	12.947	237	0,68
300	758	11.618	366	0,674
400	718	10.419	501	0,688
500	679	9.313	644	0,683
600	641	8.296	796	0,684
700	605	7.386	957	0,689
800	569	6.529	1127	0,67
900	534	5.746	1309	0,66
1000	500	5.034	1502	0,651
1100	467	4.388	1710	0,632
1200	435	3.804	1932	0,604

12.7mmx99 DM31A1 / 47.5 g / 733 gr

Distance (m)	Velocity (m/s)	Energy (J)	Time of flight (ms)	BC G1*
0	900	19.238	0	-
25	887	18.686	28	0,603
100	851	17.200	114	0,627
200	805	15.391	235	0,643
300	762	13.790	363	0,662
400	722	12.380	498	0,685
500	683	11.079	640	0,686
600	645	9.881	791	0,686
700	608	8.780	951	0,675
800	573	7.798	1120	0,69
900	539	6.900	1300	0,688
1000	505	6.057	1492	0,65
1100	473	5.314	1696	0,656
1200	442	4.640	1915	0,638